USSR

UDC 591.152:576.3

SKHOLL', Ye. D., Institute of Cytology, Academy of Sciences USSR

"Correlations Between the Initial Thermoresistance Level of Isolated Mussel Ciliated Epithelium and Changes of This Index Due to Thermal Action"

Sverdlovsk, Ekologiya, No 6, 1971, pp 69-73

Abstract: In order to separate neurohumoral and purely cellular reactions to temperature within the cell, ciliated gill epithelium isolated from Black Sea mussels (Mytilus galloprovincialis) was heated at 29 and 33°C for 1, 2, and 3 hours. Thermoresistance was measured before and after treatment by the time required for cilia to cease beating when subjected to a -38°C temperature. The treatment temperatures reflect the optimum (29°C) and sublethal temperature (33°C) for the mussel. At 29°C the average index did not change significantly over 3 hours of heating, but when tissue was grouped by initial thermoresistance level, lower levels showed larger increases, intermediate levels showed smaller increases, and higher levels showed large decreases in the index during the first hour. Then indexes of all groups dropped with subsequent heating, probably due to increased time of isolation of the tissue from the organism. At 33°C these 3 groups showed approximately similar results. Index dispersion of the 3 groups decreased between the initial and

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002203020019-2"

USSR

SKHOLL', Ye. D., Ekologiya, No 6, 1971, pp 69-73

final tests, significantly for the 33°C series and insignificantly for the 29°C series. Correlation between the initial thermoresistance and its change after 1-hour treatment was high (-0.72) for the 29°C series and intermediate but significant (-0.65) for the 33°C series. It was concluded that changes in cell thermoresistance upon heat treatment are inversely dependent on the initial thermoresistance, and thus that cells can regulate thermoresistance. The latter point is evidence of the existence of reaction-regulating mechanisms within the cell.

2/2

USSR

UDC 599.323.4 Muridae

MEYER, M. N., ORLOV, V. N., and SKHOLL', Ye. D., Zoological Institute, Academy of Sciences, USSR; Institute of Cytology, Academy of Sciences, USSR and Moscow State University

"The Nomenclature of 46- and 54-Chromosome Voles of the Type Microtus Arvalis (Pall.) (Rodentia, Cricetidae)

Moscow, Zoologicheskiy Zhurnal, Vol 51, No 1, Jan 72, pp 157-161

Abstract: Microtus subarvalis Meier, Orlov, Skholl sp. n., a new species of common vole, is described. Morphologically, M. subarvalis sp. n. is very close to M. arvalis, differing from it only in the set of chromosomes (2n = 54, chromosomes are mostly acrocentric; in M. arvalis 2n = 46, chromosomes are mostly metacentric). Another point of distinction is the shape and dimensions of spermatozoa. Voles with 46- and 54-chromosomes interbreed readily, but always yield infertile progeny. The twin species have extensive ranges, which are to a considerable extent sympatric. M. arvalis apparently has greater distribution, and is encountered in more highly varied landscapes than is the case for M. subarvalis sp. n.

USSR

UDC 591.543.1:599.323.4

SKHOLL', Ye. D., Laboratory of Comparative Cytology, Institute of Cytology, Academy of Sciences USSR, Leningrad

"Seasonal Shifts in the Thermostability of Muscles and Muscle Models in Voles

Leningrad, Tsitologiya, Vol 12, No 8, Aug 70, pp 1020-1027

Abstract: A 4 year study of seasonal shifts in the thermostability of muscles and glycinerated muscle fibers of the common vole (Microtus arvalis Pall) showed that the phenomenon is an annual cyclical process clearly manifested in the models but complicated by the direct influence of environmental conditions. Animals kept under relatively constant conditions (temperature and feeding) during the entire year exhibited seasonal fluctuations in the thermostability of muscles and contractile proteins of the actinomyosin complex. Thermostability rose in both the muscles and the model during the summer but fell during the winter. At the summer peak, thermostability respectively 22 to 43% and 35 to 53% higher than the average winter values. Seasonal shifts in the models were highly regular, and ambient temperature fluctuations (within 10°C) did not disrupt the annual rhythm of the shifts in thermostability. The process was less distinct in the muscles, which were directly affected by shifts in environmental conditions (temperature in particular).

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SKIBA, G. G.

Fedotov, B. N. and G. G. Skiba. Nonstationary three-dimensional motion of bodies of revolution in an ideal gas. IN: Trudy II Respublikanskoy konferentsii po aerogidromekhanike, teploobmenu i massoobmenu. Sektsiya "Aerodinamika bol'shikh skorostey". Kiyev, Kiyevskiy universitet, 1971, 44-49. (RZhMekh, 5/72, no. 5B326)

A boundary-value problem is considered for equations of three-dimensional nonsteady motion with boundary conditions on shock wave and body surfaces. In the selected system of coordinates, the functions characterizing the nonsteady motion of the body are the angle of precession, the angle of nutation, two components of the vector of angular velocity, and the velocity of the origin of coordinates. A sinusoidal relationship of the perturbation functions to time is postulated. The expressions of the fundamental functions are substituted into the initial equations. Linearization led to the reduction of the problem to the solution of a nonlinear system and a series of linear systems with coefficients dependent on the solution to the nonlinear system. A brief description is given of the procedure for solving the three-dimensional boundary-value problem with application to smooth bodies of revolution with spherical bluntness, with oscillations centered in the center of sphere. The scheme of G. F. Telenin, et al, is applied in the region adjoining a sphere. (Gilinskiy, Telenin, and Tinyakov, IAN SSSR. Mekhanika i mashinostroyeniye, no. 4, 1964, 9-28. RZhMekh, 1965, 5B263), while in the region between the shock wave and a conic surface the difference method of Babenko, et al is applied. (Babenko, Voskresenskiy, Lyubimov, and Rusanov. Prostranstvennoye obtekaniye gladkikh tel ideal'nym gazom. Three-dimensional ideal gas flow around smooth bodies by an ideal gas. Moskva, Nauka, 1964, RZhMekh, 1965, 4B207K).

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USSR

UDC 621.396.61:621.317.799(088.8)

KOROVYAKOV, S. F., SKIBA, N. Ye., SHLIFER, I. I., KHMEL'NITSKIY, S. Ye.

"A Device for Checking the Vibration Resistance of the Carrier Frequency of SHF Oscillators"

USSR Author's Certificate No 255378, Filed 2 Aug 68, Published 8 Apr 70 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D435 P)

Translation: This Author's Certificate introduces a device for checking the vibration resistance of the carrier frequency of SHF oscillators. The device contains an SHF receiver with frequency discriminator, an oscillograph and an external sweep oscillator for the oscillograph. To improve the accuracy of determining the frequency of vibrations of the SHF oscillator, the sweep oscillator is a vibropickup of the first harmonic of the vibration frequency mounted on the table of the vibrostand. V. P.

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1/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--PHASE DIAGRAM OF THORIUM TETRACHLORIDE URANIUM TRICHLORIDE AND PLUTONIUM TRICHLORIDE URANIUM TRICHLORIDE SYSTEMS -U-

AUTHOR-(05)-DESYATNIK, V.N., NICHKOV, I.F., PORODNOV, P.T., RASPOPIN, S.P., SKIBA, O.V.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., TSVET. MET. 1970, 13(1), 101-3

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--PHASE DIAGRAM, EUTECTIC MIXTURE, THORIUM COMPOUND, URANIUM COMPOUND, PLUTONIUM COMPOUND, CHLORIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0628 STEP NO--UR/0149/70/013/001/0101/0103

CIRC ACCESSION NO--AT0137713

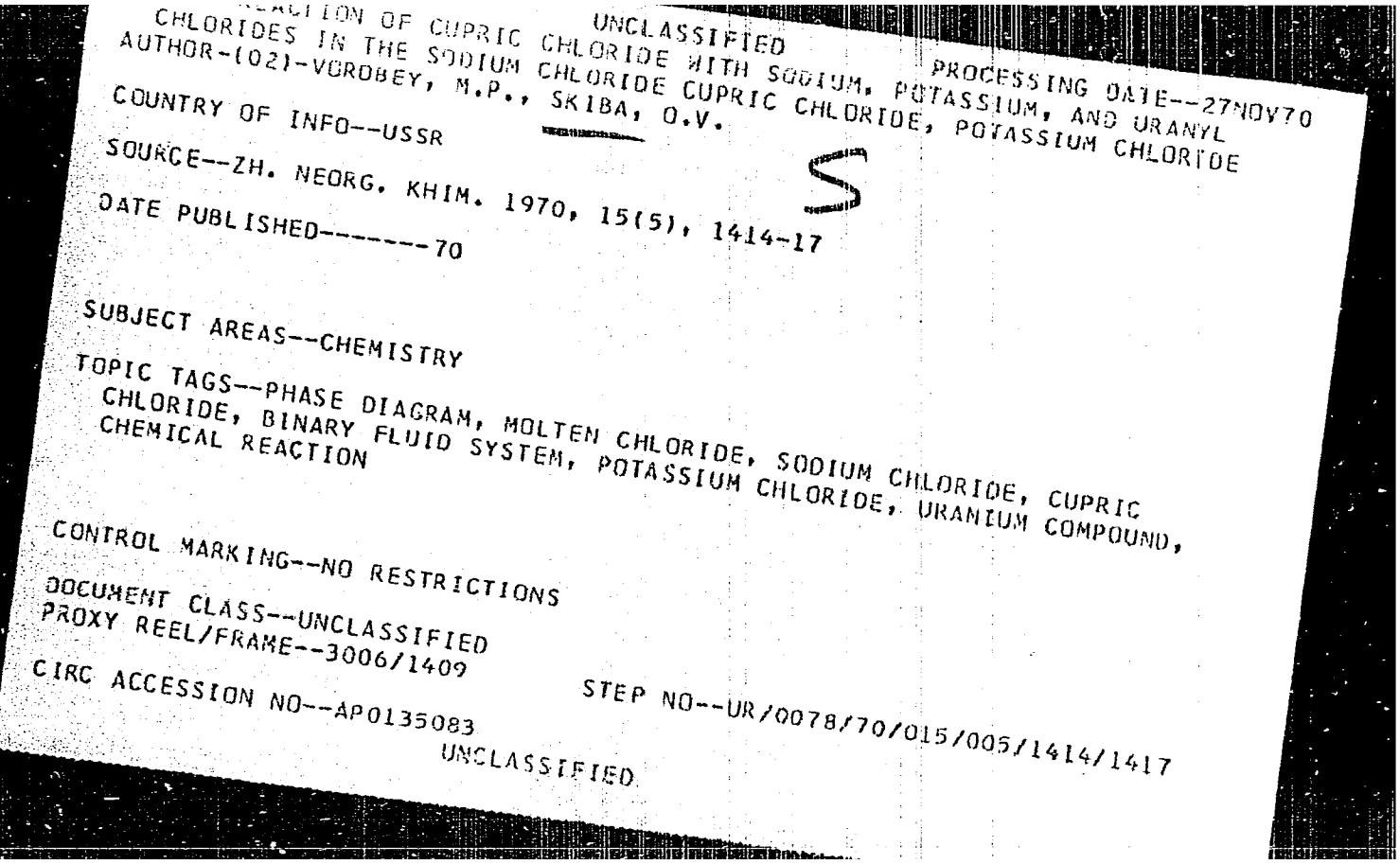
UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0137713

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHASE DIAGRAMS OF THE BINARY SYSTEMS THCL SUB4 UCL SUB3 AND PUCL SUB3-UCL SUB3 WERE INVESTIGATED. THCL SUB4-UCL SUB3 FORMS THE COMPD. 3UCL SUB3. THCL SUB4 UNSTABLE AT GREATER THAN 750DEGREES WHICH FORMS A CUTECTIC MIXT. WITH THCL SUB4. THE ONLY EUTECTIC IN THE THCL SUB4-UCL SUB3 SYSTEM IS AT 30 MOLE PERCENT UCL SUB3 AND 632DEGREES. IN THE PUCL SUB3-UCL SUB3 SYSTEM A COMPD. UNSTABLE AT GREATER THAN 700DEGREES (3UCL SUB3. PUCL SUB3) FORMS A EUTECTIC MIXT. WITH PUCL SUB3. THE EUTECTIC IN THE PUCL SUB3-UCL SUB3 SYSTEM IS AT 44 MOLE PERCENT UCL SUB3 AND 496DEGREES. FACILITY: URAL POLITEKH. INST., SVERDLOVSK, USSR.

UNCLASSIFIED



UNCLASSIFIED PROCESSING DATE--27NOV70

REACTION OF CUPRIC CHLORIDE WITH SODIUM, POTASSIUM, AND URANYL CHLORIDES IN THE SODIUM CHLORIDE CUPRIC CHLORIDE, POTASSIUM CHLORIDE

AUTHOR-(02)-VOROBEY, M.P., SKIBA, O.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(5), 1414-17

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHASE DIAGRAM, MOLTEN CHLORIDE, SODIUM CHLORIDE, CUPRIC CHLORIDE, BINARY FLUID SYSTEM, POTASSIUM CHLORIDE, URANIUM COMPOUND, CHEMICAL REACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1409

CIRC ACCESSION NO--AP0135083 STEP NO--UR/0078/70/015/005/1414/1417

UNCLASSIFIED

2/2 018 UNCLASSIFIED

CIRC ACCESSION NO--AP0135083 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHASE DIAGRAMS OF THE NACL CUCL SUB2, KCL CUCL SUB2, AND UO SUB2 CL SUB2 SYSTEMS ARE PRESENTED. THE CONGRUENTLY MELTING COMPD. KCUCL SUB3 FORMS IN THE KCL CUCL SUB2 SYSTEM. BECAUSE OF THE REACTION CUCL SUB2(L) FORMS AND IS FORMED FROM CUCL(L) PLUS ONE HALF CL SUB2(G), THESE SYSTEMS IN CLOSED CONTAINERS MUST BE CONSIDERED AS POLYTHERMAL SECTIONS OF THE TERNARY SYSTEMS CONTG. LESS THAN OR EQUAL 20PERCENT CUCL.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--23OCT7(

TITLE--SALT SYSTEMS BASED ON LITHIUM CHLORIDE, RUBIDIUM CHLORIDE, CESIUM CHLORIDE, AND URANYL CHLORIDE -U-

AUTHOR-(03)-VOROBEY, M.P., SKIBA, O.V., BEVZ, A.S.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. 1970, 28(2), 139

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--LITHIUM CHLORIDE, RUBIDIUM COMPOUND, EUTECTIC, ALKALI METAL, URANIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1574

STEP NO--UR/0089/70/028/002/0139/0139

CIRC ACCESSION NO--AP0120353

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--23OCT7

CIRC ACCESSION NO--AP0120353

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LICL-YO SUB2 CL SUB2 SYSTEM I CHARACTERIZED BY THE FORMATION OF 2 COMPDS., LI SUB2 UO SUB2 CL SUB4 (M.P. 508DEGREES) AND LI(UO SUB2) SUB3 CL SUB7 (M.P. 525DEGREES); EUTECTIC MIXTS. CONTAIN 26 AND 42.5 MOLE PERCENT UO SUB2 CL SUB2, AND THE RESP. M.PS. ARE 466 AND 450DEGREES. MIXTS. WITH SMALLER THAN OR EQUAL TO 30 MOLE PERCENT UO SUB2 CL SUB2 CONTAIN SOME PENTAVALENT U FORMED IN THE EQUIL. DISSOCN. OF UO SUB2 CL SUB2 TO UO SUB2 CL AND CL SUB2. THE RBCL-UO SUB2 CL SUB2 SYSTEM IS CHARACTERIZED BY THE FORMATIC OF RB SUB2 UO SUB2 CL SUB4, RB(UO SUB2) SUB2 CL SUB5, AND RB SUB4 UO SUB2 CL SUB6, AND BY 3 EUTECTIC MIXTS. CONTG. 30, 38 AND 81.5-82.5 MOLE PERCENT UO SUB2 CL SUB2 AND M. 355, 340, AND 510DEGREES, RESP.; THE COMPDS. FORMED IN THE CSCL-UO SUB2 CL SUB2 SYSTEM ARE OF THE SAME TYPES AS THOSE FORMED IN THE RBCL-UO SUB2 CL SUB2 SYSTEM, WHILE THE EUTECTIC MIXTS. CONTAIN 30, 41.5 AND 82.5 MOLE PERCENT UO SUB2 CL SUB2 ANDM. 395 370, AND 516DEGREES, RESP. NO PENTAVALENT U IS FOUND IN THE SYSTEMS CONTG. RB OR CS; THIS IS ATTRIBUTED TO THE STABILIZING EFFECT OF THE INCREASE IN THE IONIC RADIUS OF THE ALKALI METAL.

UNCLASSIFIED

USSR

GAUTIN, V.Z., SENKEVICH, S.S., SKIBARKO, A.P.

UDC 621.391.63

"Some Features Of The Operation Of A FM Renge Finder With The Use Of A Gas Laser"

Izv. VUZ:Radioelektronika, Vol XV, No 12, Dec 1972, pp 1421-1427

Abstract: The paper studies the peculiarities and possible uses of laser radiation for measurement of distances with the aid of frequency modulation. The effect was experimentally observed of the "unevenness" of change of the medium frequency of the output signal of a laser FM range finder with a change of the distance being measured. A study of the output signal showed that this effect is connected with a quasi-periodicity originating because of the recurrence period of the laser radiation during a change of frequency of the modes which are created at an intermode distance. The results of a calculation confirm that the effect of "unevenness" is connected with the quasi-periodicity of the radiation. During the calculation, subdivision of the modulation period into individual elementary cycles was employed, which made it possible to obtain an analytical expression for the medium frequency of the output signal. It is concluded that it is impossible with the aid of a laser FM range finder to measure distance more precisely than the doubled length of the resonator. 4 fig. Received by editors, 21 December 1971.

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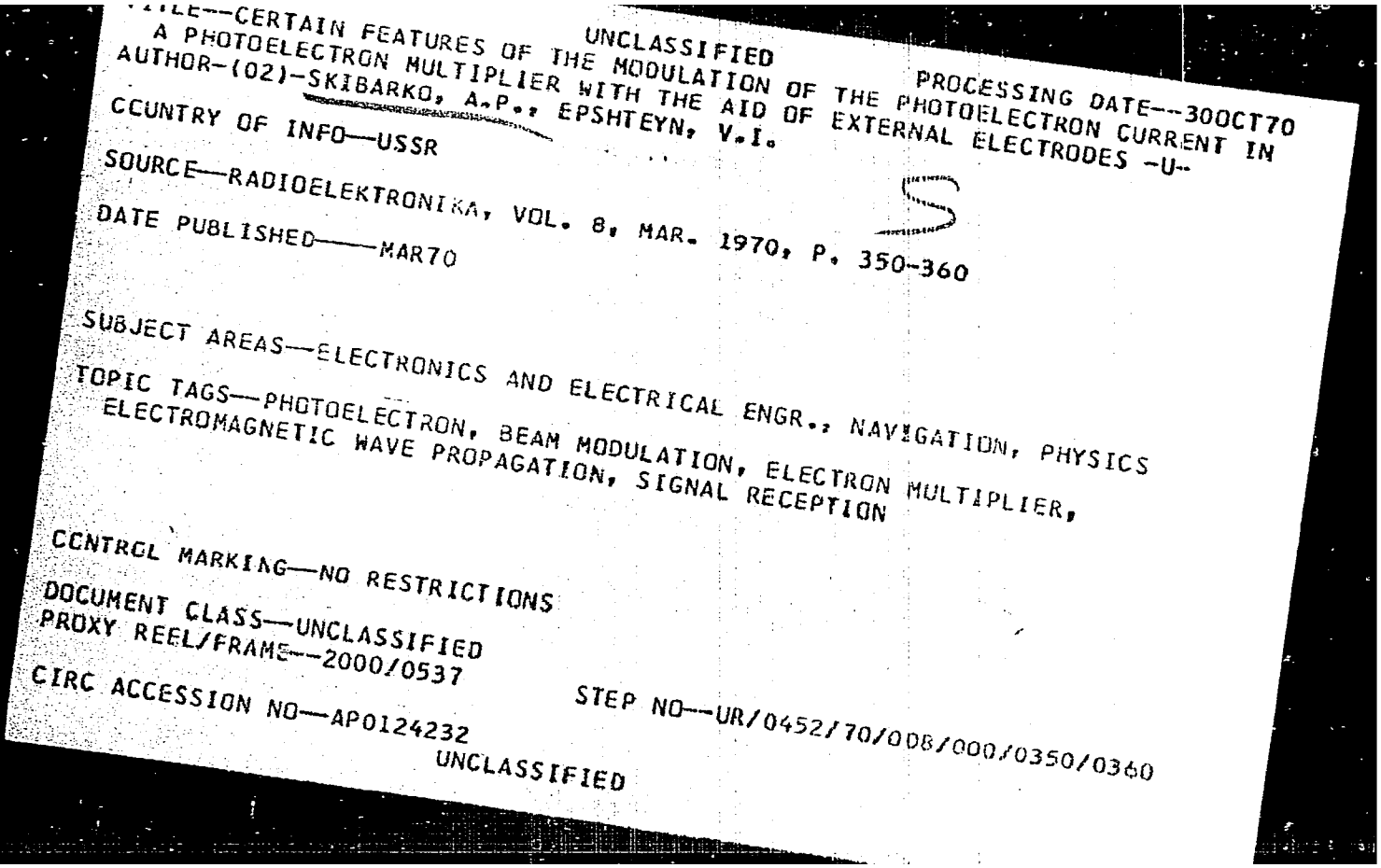


UNCLASSIFIED

TITLE--CERTAIN FEATURES OF THE MODULATION OF THE PHOTOELECTRON CURRENT IN A PHOTOELECTRON MULTIPLIER WITH THE AID OF EXTERNAL ELECTRODES -U-

AUTHOR-(02)-SKIBARKO, A.P., EPSHTEYN, V.I.

COUNTRY OF INFO--USSR

SOURCE--RADIOELEKTRONIKA, VOL. 8, MAR. 1970, P. 350-360

DATE PUBLISHED----MAR70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., NAVIGATION, PHYSICS

TOPIC TAGS--PHOTOELECTRON, BEAM MODULATION, ELECTRON MULTIPLIER, ELECTROMAGNETIC WAVE PROPAGATION, SIGNAL RECEPTION

CONTROL MARKING--NO RESTRICTIONS

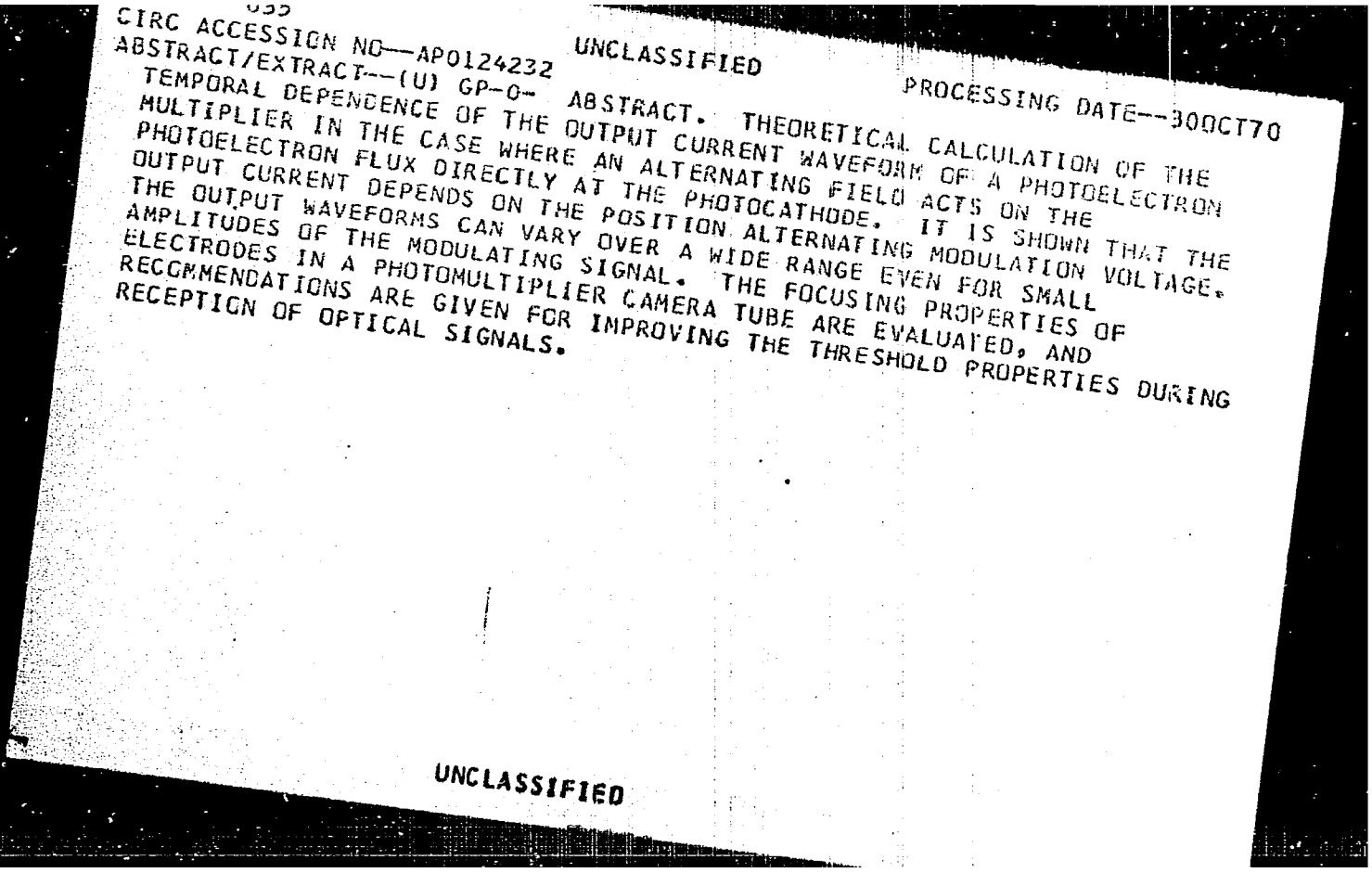
DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0537

CIRC ACCESSION NO--AP0124232

STEP NO--UR/0452/70/008/000/0350/0360

UNCLASSIFIED



UNCLASSIFIED

CIRC ACCESSION NO--AP0124232 UNCLASSIFIED PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL CALCULATION OF THE TEMPORAL DEPENDENCE OF THE OUTPUT CURRENT WAVEFORM OF A PHOTOELECTRON MULTIPLIER IN THE CASE WHERE AN ALTERNATING FIELD ACTS ON THE PHOTOELECTRON FLUX DIRECTLY AT THE PHOTOCATHODE. IT IS SHOWN THAT THE OUTPUT CURRENT DEPENDS ON THE POSITION ALTERNATING MODULATION VOLTAGE. THE OUTPUT WAVEFORMS CAN VARY OVER A WIDE RANGE EVEN FOR SMALL AMPLITUDES OF THE MODULATING SIGNAL. THE FOCUSING PROPERTIES OF ELECTRODES IN A PHOTOMULTIPLIER CAMERA TUBE ARE EVALUATED, AND RECOMMENDATIONS ARE GIVEN FOR IMPROVING THE THRESHOLD PROPERTIES DURING RECEPTION OF OPTICAL SIGNALS.

UNCLASSIFIED

USSR

KAMENSKIY, N. N., PRICHKO, Yu. V., and SKIBARKO, A. P.

UDC: 621.383.52

"Dependence of Photodiode Sensitivity and Inertia on the Dimensions and Position of a Light Spot on the Light-Sensitive Area"

Kiev, Izvestiya VUZ--Radioelektronika, Vol 14, No 1, 1971, pp 72-75

Abstract: The results of investigations into the possibility of increasing the sensitivity and rapidity of action of photosensitive diodes with the use of a focusing system are given. In general, the sensitivity and inertia of the diode depend on the thickness of the photosensitive base, the surface recombination rate at the illuminated point on the base, and the absorption factor for a particular optical wavelength. Since the diffusion length of the minority carriers is much larger than the base thickness, the space recombination can be neglected. A relief diagram of the sensitivity and inertia values at the central part of the base in a type 1690 photodiode is shown; the light used to obtain these results had a wavelength of 0.63 μ, the diameter of the light spot was about 50 μ, and the distance between the centers of the relief squares was 100 μ. Curves are plotted for diode characteristics as functions of light spot diameter.

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USSR

UDC 533.9.03,621.039.616

BREDIKHIN, M. Yu., IL'CHENKO, A. M., MASLOV, A. I., SKIBENKO, A. I., SKIBENKO, Ye. I., and YUFEROV, V. B.

"Investigating Conditions for the Formation of a Dense Plasma in Electron Beam Injection Into a Magnetic Trap"

Moscow, Atomnaya energiya, Vol 29, No 4, Oct 70, pp 276-282

Abstract: The continuation of an earlier article by the same authors (Ukrainian Physical Journal, 14, 1969, p 1167), this paper describes experimental work they performed to study the conditions of plasma formation with a density of 10^{14}-10^{15} cm^{-3} in a corkscrew-shaped magnetic trap into which an electron beam interacting with a neutral gas was injected. The experiments were performed with the VGL-2 equipment, in which the magnetic field is generated by two solenoids cooled with liquid nitrogen. Maximum magnetic field intensity is 21 kilogauss. A diagram of the VGL-2 together with details of the equipment's operation and the experimental method is given. Oscillograms showing the development of the beam-plasma discharge are reproduced, and curves of the growth time of plasma density as a function of electron beam current and the time rate of change of plasma density in the ionization of a neutral gas are plotted.

1/1

USSR

UDC 533.916

BREDIKHIN, M. Yu., IL'CHENKO, A. M., MASLOV, A. I., SKIBENKO, A. I., SKIBENKO, Ye. I., YUFEROV, V. B.

"Study of a Dense Plasma Formed by an Electron Beam in a Magnetic Trap"

Fiz. plazmy i probl. upravl. termoyader. sinteza. Resp. mezhved. sb. (Plasma Physics and Problems of the Controlled Thermonuclear Fusion. Republic Interdepartmental Collection), 1972, No. 3, pp 147-161 (from RZh-Fizika, No 11, Nov 72, Abstract No 11G237)

Translation: An experimental study of the possibility of the formation of a dense plasma in the interaction of a high-energy electron beam with a neutral gas in a magnetic field of helical configuration is described. The introduction of a neutral gas into the interaction region in the form of a supersonic jet made it possible to produce the necessary pressure drop without applying special differential pumping systems. Conditions for the exponential rise in plasma density as a function of the parameters of the beam-plasma discharge were determined. It was concluded on the basis of the experiments that it is possible to form a plasma with a density of $5\text{-}7\cdot10^{14}$ cm^{-3} with a supersonic jet of neutral gas.

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USSR

UDC: 681.32.001

POPOV, V. A., MOKLYAK, N. G., SKIBENKO, I. T., SYCHEV, A. V., Khar'kov Aviation Institute

"On a Method of Optimum Synthesis of Universal Logic Modules"

Leningrad, Izvestiya VUZov: Priborostroyeniye, Vol 16, No 11, 1973, pp 58-61

Abstract: Previous papers have established a number of properties inherent in Boolean functions with high logical effectiveness, defined as the number of classes or types of subfunctions obtained by adjustments, and have also suggested a method of constructing universal logic modules which maximize the number of subfunctions. This paper proposes a group theory approach to synthesizing optimum universal logic modules which enables purposeful sorting of Boolean functions rather than trial and error and also considerably reduces the number of external adjustments which give identical subfunctions. The proposed method was used to develop an algorithm for synthesizing optimum universal logic modules. The algorithm is written in ALGOL-60 and realized on the BESM-4 computer. The circuit of one of the resultant modules is given. The method can be generalized to l-valued logic functions.

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USSR

POPOV, V. A., SKIBENKO, I. T., and MOKLYAK, N. G. UDC 577.4

"A List of Types of Systems of Indeterminate Boolean Functions"

V sb. Radioelektronika letatel'n. apparatov (Radioelectronics of Flying Apparatus - Collection of Works), No 5, Khar'kov, 1973, pp 152 - 158 (from RZh Matematika No 12, 1973, abstract No 12 V465)

Translation: This article lists the types of systems of indeterminate Boolean functions with respect to groups of variable transpositions, inversions, and transformations of a single type. The case in which the groups act both on the area of determinacy and in the area of significance of the system function is considered. The numbers of types of systems for $n,m \leq 3$ are obtained. It is found that the number of these types when $n = m = 3$ exceeds 10^8. Cyclic indices of the groups considered are found but are not given in the article.

Abstract by A. Sapozhenko.

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UDC 519:62-507

POPOV, V. A., MOKLYAK, N. G., and SKIBENKO, I. T.

"Enumeration of Types of Ternary Switching-Function Systems"

Riga, Avtomatika i Vychislitel'naya Tekhnika, No 4, Jul-Aug 73, No. Dep 5386-73 dated 9 Jan 73, received by editors 23 Nov (27 Jan) 72, p 36

Translation: The article considers systems of m ternary switching functions of n variables (SF) to describe ternary (n,m)-poles. A determination is made of the number of equivalence classes (types) of (n,m)-poles relative to five different groups inducing a given equivalence: 1) symmetrical group $S_n(3)$ of order n! to the 3^n power; 2) negation group D_3^n of order 2^n to the 3^n power; 3) cyclic-negation group T_3^n of order 3^n to the 3^n power; 4) group H_3^n, which is the semidirect product of groups $S_n(3)$ and D_3^n; 5) group G_3^n, which is the semidirect product of $S_n(3)$ and T_3^n. The authors consider the case in which any of these groups acts on the domains of definition of an SF system; and another group, on the domains of values of the functions of the system. Here use is made of theorems of Pólya and de Bruyn which employ the cycle indices of permutation groups. To find the cycle indices of the groups under consideration, an effective algorithm, written in ALGOL-60 and realized on a BESM-4 digital computer, is offered. The authors present the cycle indices of groups $S_n(3)$,

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USSR

POPOV, V. A., et al., Avtomatika i Vychislitel'naya Tekhnika, No 4, Jul-Aug 73, Dep 5386-73 dated 9 Jan 73, received by editors 23 Nov (27 Jan 72, p 36

H_3^n, and G_3^n for $n \leq 6$, as well as results of calculations of types of (n,m)-poles for $n, m \leq 3$. Twelve tables. Bibliography with seven titles.

2/2

UDC 533.916

BREDIKHIN, M. Yu., IL'CHENKO, A. M., MASLOV, A. I., SKIBENKO, A. I., SKIBENKO, Ye. I., YUFEROV, V. B.

"Study of a Dense Plasma Formed by an Electron Beam in a Magnetic Trap"

Fiz. plazmy i probl. upravl. termoyader. sinteza. Resp. mezhved. sb. (Plasma Physics and Problems of the Controlled Thermonuclear Fusion. Republic Interdepartmental Collection), 1972, No. 3, pp 147-161 (from RZh-Fizika, No 11, Nov 72, Abstract No 11G237)

Translation: An experimental study of the possibility of the formation of a dense plasma in the interaction of a high-energy electron beam with a neutral gas in a magnetic field of helical configuration is described. The introduction of a neutral gas into the interaction region in the form of a supersonic jet made it possible to produce the necessary pressure drop without applying special differential pumping systems. Conditions for the exponential rise in plasma density as a function of the parameters of the beam-plasma discharge were determined. It was concluded on the basis of the experiments that it is possible to form a plasma with a density of $5\text{-}7\cdot10^{14}$ cm^{-3} with a supersonic jet of neutral gas.

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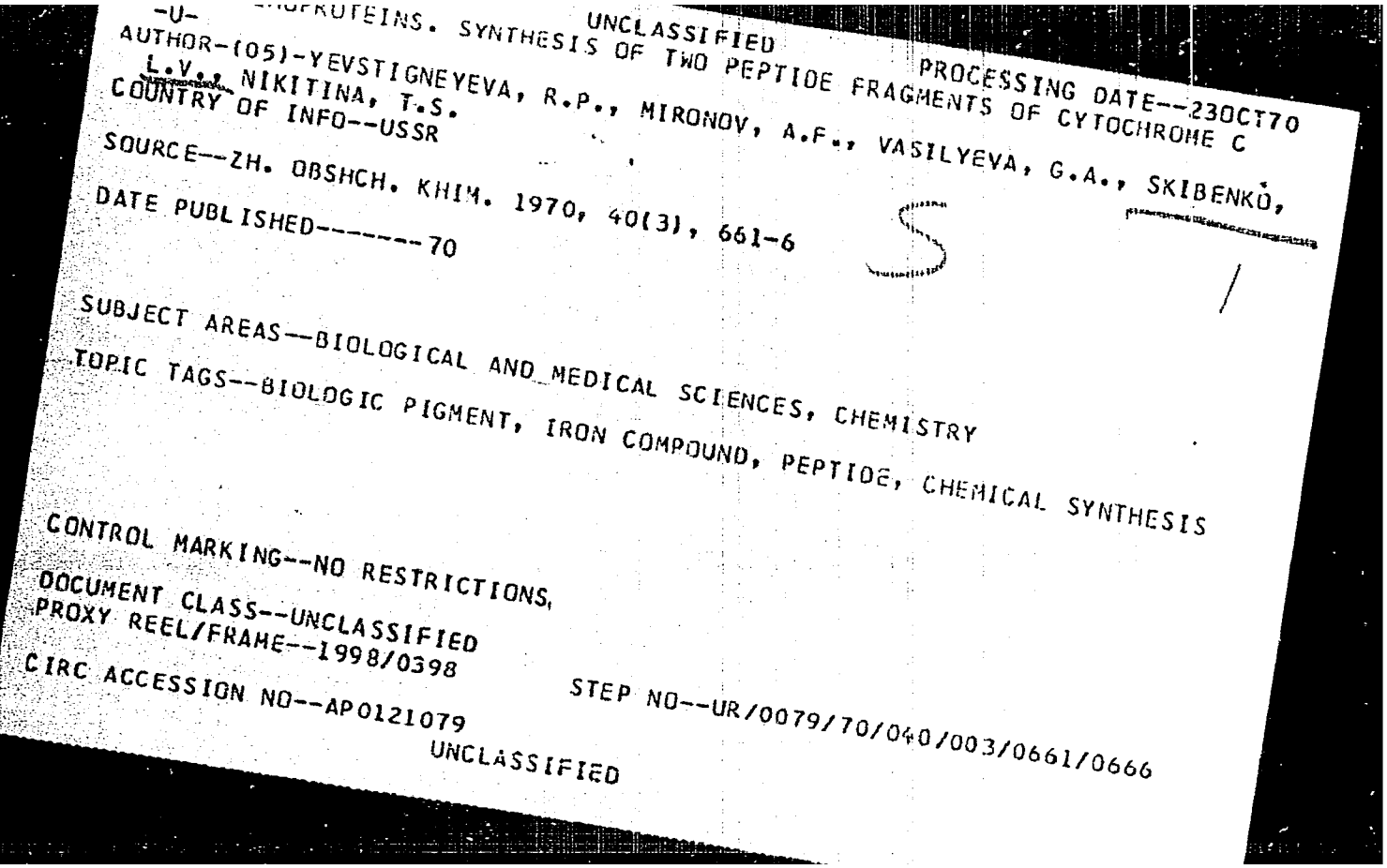

-U- UNCLASSIFIED PROCESSING DATE--23OCT70
...PROTEINS. SYNTHESIS OF TWO PEPTIDE FRAGMENTS OF CYTOCHROME C
AUTHOR-(05)-YEVSTIGNEYEVA, R.P., MIRONOV, A.F., VASILYEVA, G.A., SKIBENKO, L.V., NIKITINA, T.S.
COUNTRY OF INFO--USSR
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 661-6
DATE PUBLISHED-------70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY
TOPIC TAGS--BIOLOGIC PIGMENT, IRON COMPOUND, PEPTIDE, CHEMICAL SYNTHESIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0398
CIRC ACCESSION NO--AP0121079 STEP NO--UR/0079/70/040/003/0661/0666
UNCLASSIFIED

2/3 009 UNCLASSIFIED

CIRC ACCESSION NO--AP0121079 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BOC EQUALS TERT, BUO SUB2 C,Z EQUALS PHCH SUB2 O SUB2 C THROUGHOUT. BOC,L,ALA AND N,HYDROXY, SUCCINIMIDE (HOSU) TREATED IN DIOXANE WITH DICYCLOHEXYLCARBODIIMIDE 12 HR GAVE 74PERCENT BOC,L,ALA,OSU, M. 158.3-59DEGREES; SIMILARLY WAS PREPD. 80PERCENT BOC,O,BENZYL,L,SER,OSU (I) M. 104-5DEGREES. N,Z,L,GLN IN DMF WAS TREATED WITH PYRIDINE AND ET SUB2 N, FOLLOWED BY PIVALOYL CHLORIDE AT MINUS 15DEGREES, FOLLOWED IN 15 MIN BY S BENZYL,L, CYSTEINE ME ESTER,HCL AND ET SUB3 N, AND THE MIXT. HELD 12 HR, FINALLY AT ODEGREES, TO YIELD 86PERCENT N,Z,L,GLN,S,BENZYL,L,CYS,OME (II), M. 199-200DEGREES. SIMILARLY WAS PREPD. 82PERCENT BENZYL,ESTER ANALOG, M. 187-9DEGREES. N,Z,L,ALA,OSU AND II.HBR WITH N,METHYLMORPHOLINE IN DMF GAVE IN 5 HR 85PERCENT N,Z,L,ALA,L,GLN,S,BENZYL,L, CYS,OME (III), M. 192.5-4.5DEGREES. SIMILARLY WAS PREPD. 8.5PERCENT N,BOC,L,ALA,L,GLN,S,BENZYL,L,CYS,OCH SUB2 PH, M. 152-3DEGREES. TREATING III WITH 36PERCENT HBR IN ACOH 0.5 HR, FOLLOWED BY THE P,NITROPHENYL ESTER OF N,Z,X,BENZYL,L,CYS IN DMF IN THE PRESENCE OF N,METHYLMORPHOLINE, GAVE IN 12 HR, 82.5PERCENT N,Z,S,BENZYL,L,CYS,L,ALA,L,GLN,S,BENZYL,L,CYS, OME, M. 218-19.5DEGREES. SIMILARLY WAS PREPD. 94PERCENT BENZYL ESTER ANALOG, M. 205-6.5DEGREES, WHICH WITH N SUB2 H SUB4 IN ETOH,DIOXANE GAVE THE HYDRAZIDE, M. 234-6DEGREES, WHICH TREATED WITH HCL, FOLLOWED BY NANO SUB2, THEN IN 5 MIN BY BENZYL ESTER OF N PRIMEIM,BENZYL,L,HISTIDINE AND ET SUB3 N, GAVE IN 2 DAYS 80PERCENT N,Z,S,BENZYL,L,CYS,L,ALA,L,GLN,S,BENZYL,L,CYS,N PRIMEIM, BENZYL,L,HIS,OCH SUB2 PH, M. 188-9.5DEGREES.

UNCLASSIFIED

3/3 009 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0121079

ABSTRACT/EXTRACT--I AND L,GLN,S, BENZYL,L,CYS,OME.HBR WITH N,METHYLMORPHOLINE IN DMF 12 HR 80PERCENT N,BOC,O,BENZYL,L,SER,L,GLN,S,BENZYL,L,CYS,OME, M. 131.5-3.5DEGREES, WHOSE HCL SALT TREATED WITH THE NITROPHENYL ESTER OF CYSTEINE IN DMF WITH N,METHYLMORPHOLINE, GAVE IN 12 HR 88PERCENT N,Z,S,BENZYL,L,CYS,O,BENZYL,L,SER,L,GLN,S,BENZYL,L,CYS, OME, M. 192.5-4.5DEGREES. THIS SUSPENDED IN DIOXANE,ETOH AND TREATED WITH N SUB2 H SUB4 1 DAY GAVE THE HYDRAZIDE, M. 200-2DEGREES, WHICH WITH HCL AND NANO SUB2 GAVE THE AZIDE, WHICH TREATED IN SITU WITH N PRIMEIM, BENZYLHISTIDINE BENZYL ESTER AND ET SUB3 N IN ETOAC 2 DAYS GAVE N,Z,S,BENZYL,L,CYS,O,BENZYL,L,SER,L,GLN,S,BENZYL,L,CYS,N PRIMEIM, BENZYL,HIS,OCH SUB2 PH, M. 184-6DEGREES. FACILITY: MOSK. INST. TONKOI KHIM. TEKHNOL. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 533.9.03,621.039.616

BREDIKHIN, M. Yu., IL'CHENKO, A. M., MASLOV, A. I., SKIBENKO, A. I., SKIBENKO, Ye. I., and YUFEROV, V. B.

"Investigating Conditions for the Formation of a Dense Plasma in Electron Beam Injection Into a Magnetic Trap"

Moscow, Atomnaya energiya, Vol 29, No 4, Oct 70, pp 276-282

Abstract: The continuation of an earlier article by the same authors (Ukrainian Physical Journal, 14, 1969, p 1167), this paper describes experimental work they performed to study the conditions of plasma formation with a density of 10^{14}-10^{15} cm^{-3} in a corkscrew-shaped magnetic trap into which an electron beam interacting with a neutral gas was injected. The experiments were performed with the VGL-2 equipment, in which the magnetic field is generated by two solenoids cooled with liquid nitrogen. Maximum magnetic field intensity is 21 kilogauss. A diagram of the VGL-2 together with details of the equipment's operation and the experimental method is given. Oscillograms showing the development of the beam-plasma discharge are reproduced, and curves of the growth time of plasma density as a function of electron beam current and the time rate of change of plasma density in the ionization of a neutral gas are plotted.

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USSR

UDC 546.562+541.8

BAL'KOV, B. G., and SKIBIDA, I. P.

"Complex Formation of Copper Stearate With Alcohols, Ketones, and Organic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 4, 1972, pp 908-913

Abstract: The equilibrium constant and heat effects were determined for the formation of the 1:1 complexes between copper stearate and secondary decyl alcohol, undecanone-6, and 9-heptadecanoic acid. The equilibrium constants, determined in this article by isomolar and equilibrium perturbation methods, were low by about a factor of 2 relative to reported spectral data. Values for the heat effect (enthalpy) fall within the range of published data.

USSR

UDC 539.4

TYULENEV, V. N., and SKIBIN, V. A., Moscow, Central Scientific Research Institute of Aircraft Engines imeni P. I. Baranov

"Experimental Investigation of Oscillations of the Rotor of a Gas Turbine Engine"

Kiev, Problemy Prochnosti, No 9, Sep 73, pp 72-75

Abstract: Occasional oscillations of discs and blades of the rotor of gas turbine engines with frequencies which condiderably differ from partial calculated values and also from test data of single discs or blades indicate that in such cases the coherence of oscillations of rotor elements plays an important role. Experiments, using the EDVS-4000 type electrodynamic vibrator and a TsTS-19 type piezoelectric transducer, are described, which were carried out with a view to explain the character of these oscillations. The results are analyzed by reference to demonstrated longitudinal torsional oscillations of the rotor and oscillograms registered by the vibration transducer and tensometers. Five figures.

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USSR UDC 539.4

TYULENEV, V. N., SKIBIN, V. A., (Moscow)

"The Influence of Adjustable Step Difference in a Guiding Apparatus on the Level of Variable Stresses in Working Blades of a Compressor"

Kiev, Problemy Prochnosti, No 12, Dec. 1972, pp 102-105.

Abstract: A method is studied for reducing the level of variable stresses in the working blades of a compressor when using adjustable step differences in the guiding apparatus. Calculation relationships and experimental tests of the method are presented.

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UNCLASSIFIED PROCESSING DATE--23OCT70

1/2 035

TITLE--STUDY OF THE GAS SEPARATION OF STAINLESS STEELS -U-

AUTHOR-(02)-MAKAROVA, V.I., SKIBINA, G.B.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY, MASHINOSTROYENIYE, NO. 1, 1970, PP 126-129

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--STAINLESS STEEL, ALLOY DESIGNATION, CHROMIUM STEEL, GAS CONTAINING METAL, METAL CONTAINING GAS, HYDROGEN, NITROGEN, WATER VAPOR, CARBON DIOXIDE, GAS DIFFUSION/(U)KH25 CHROMIUM STEEL, (U)KH17 CHROMIUM STEEL, (U)1KH17N2 CHROMIUM NICKEL STEEL, (U)KH18N10T STAINLESS STEEL, (U)KH12N20T3RM STAINLESS STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0145/70/000/001/0126/0129

PROXY REEL/FRAME--1985/0483

CIRC ACCESSION NO--AT0100961

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--23OCT70

2/2 035
CIRC ACCESSION NO--AT0100961
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHYSICAL NATURE OF PHENOMENA DETERMINING THE GAS SEPARATION OF HYDROGEN DURING ISOTHERMAL HOLDING AT TEMPERATURES FROM 20 TO 350DEGREESC WAS STUDIED FOR THE FOLLOWING FERRITIC, MARTENSITE, AND AUSTENITIC STEELS: KH12N20T3RM, KH18N10T, 1KH17N2, KH17, AND KH25. THE PURPOSE OF THE STUDY WAS TO DETERMINE THE EFFECT OF THE PERCENTAGE OF CHROME (12-25PERCENT) AND NICKEL (0-20PERCENT) CONTENT IN STAINLESS STEELS ON THE SEPARATION RATE OF H, H SUB2 O, AND CO PLUS N SUB2 FROM THE STEELS. AT TEMPERATURES UP TO 200DEGREESC, DESORPTION OF THE SURFACE GASES WAS SEEN TO PREVAIL; HOWEVER, AT HIGHER TEMPERATURES, DESORPTION OF THE GASES DIFFUSING FROM THE DEEPER LAYERS OF THE METALS WAS OBSERVED. IT WAS ESTABLISHED THAT THE GAS DIFFUSION RATE THROUGH THE OXIDE LAYER, AND NOT THE DIFFUSION RATE THROUGH THE METAL, AFFECTS THE GAS SEPARATION RATE AT HIGHER TEMPERATURES. IN STUDYING THE CHROME CONTENT, IT WAS SEEN THAT THE CHROME CONTRIBUTES TO THE DEVELOPMENT OF OXIDES WITH GOOD PROTECTIVE PROPERTIES, AND AT THE SAME TIME IT REDUCES THE GAS SEPARATION RATE. ON THE OTHER HAND, NICKEL INCREASES THE SEPARATION RATE, BUT IT POSSESSES POOR PROTECTIVES CHARACTERISTICS. IT IS MENTIONED THAT THE SEPARATION RATES GIVEN FOR THE FOUR STEELS CAN BE USED FOR CALCULATING THE OUTPUT OF VACUUM PUMPS FOR LARGE HOLDING CHAMBERS.

UNCLASSIFIED

UDC 669.140

USSR

MAKAROVA, V. I. (Candidate of Technical Sciences, Docent), SKIBINA, G. V. (Engineer)

"Study of Gas Separation of Stainless Steels"

Moscow, IVUZ Mashinostroyeniye, No 1, Jan 70, pp 126-129

Abstract: The article considers the following steels of austenite, ferrite and martensite class: Kh12N20T3RM, Kh18N10T, 1Kh17N2, Kh17 and Kh25. The physical nature of the phenomena which determine the gas separation of hydrogen during isothermal holdings in the temperature range 20-350° C is studied. The process of desorption of surface gases prevails at temperatures below 200° C, and at higher temperatures the desorption of gases diffused from the deep layers of metal takes place. It is established that the rate of gas separation at elevated temperatures, at which desorption of gases separated by metal prevails, is affected by the rate of gas diffusion through a layer of oxide and by the rate of diffusion through metal. Study of the effect of chromium content in stainless steels reveals that it promotes production of oxides which have good protective properties and thereby reduces

USSR

MAKAROVA, V. I., IVUZ Mashinostroyeniye, No 1, Jan 70, pp 126-129

the rate of gas separation. Nickel increases the rate of gas separation of stainless steels which leads to formation of oxides with weak protective properties. The obtained data can be used for the calculation of the efficiency of vacuum pumps during pumping out of large volume chambers. The article was presented by I. I. Sidorin, Doctor of Technical Sciences, Professor of the Moscow Higher Technical School imeni N. E. Bauman.

USSR

UDC 539.4

IL'ICHEV, V. YA., SKIBINA, L. V., STARTSEV, V. I., Physicotechnical Institute of Low Temperatures, Academy of Sciences UkrSSR, Khar'kov

"Change in the Mechanical Properties of Austenite Stainless Steels and Alloys Due to a Martensite Transformation at Low Temperatures"

Kiev, Problemy prochnosti, No. 8, Aug 71, pp 74-77

Abstract: The results of a study of the effect of deformation on martensite transformations in certain austenite stainless steels are presented. It is noted that at present there is no single viewpoint on the mechanism and kinetics of martensite transformations although the theory of defects in the crystalline lattice developed in recent years more or less satisfactorily describes the mechanism for the generation of a new phase in the deformation of the material. Martensite transformations and their effects on strength and plasticity were studied in steels of the type Kh18N7, Kh18N10, Kh18N15 and Kh18N20 at low temperatures and under various test conditions. It was shown that the amount of martensite arising as a result of the $\gamma \rightarrow \alpha$-transformation under cooling and deformation essentially depends on the composition of the

IL'ICHEV, V. YA., et al, Problemy prochnosti, No. 8, Aug 71, pp 74-77

steel and on the working conditions. The experiments showed that at a given temperature the amount of martensite depends only on the total degree of deformation and is independent of the time over which the deformation is achieved. The creep velocity increases with a rise in the stress level although the rate of creep should decrease with a rise in the martensite content since martensite plates are a preventative to the motion of dislocations and slow down creep. A comparison of steels Kh18N7 and Kh19N10 shows that martensite formed in cold working and martensite gradually arising in the sample through low-temperature deformation effect the mechanical properties of these steels in different ways. It is hypothesized that at large stresses there may occur shifts in low-carbon martensite and as a result the rate of creep increases. It is noted that these experiments are only a beginning and that further accumulation of experimental results is necessary.

USSR

UDC 621.375.82

AKHMANOV, S. A., ORLOV, R. Yu., SKIDAN, I. B., TELEGIN, L. S.

"Picosecond Pulses in the Ultraviolet Band"

V sb. Nelineyn. protsessy v optike. (Nonlinear Processes in Optics-- collection of works), Vyp. 2, Novosibirsk, 1972, pp 27-34 (from RZh-Fizika, No 12, Dec 72, Abstract No 21D869)

Translation: An experimental study was made of self-focusing and induced Raman emission in liquid nitrogen of picosecond radiation pulses with a power to 10^7 watts and a mean wavelength of $\lambda = 0.26$ microns. The pulses are obtained as a result of transformation of the radiation generated by a neodymium glass laser in the synchronization mode into the fourth harmonic. The laser radiation comprised 15-20 pulses 3-4 picoseconds in duration with a power of $3 \cdot 10^9$ watts. The efficiency of conversion into the fourth harmonic in the system made up of the generator with a core 24 cm long and 2 series frequency doublers was 1-2%. The high-power stability of the fourth harmonic was noted. This was achieved with difficulty in the nanosecond pulse mode. The induced Raman emission threshold was reached for a fourth harmonic pulse power of 10^6 watts. The self-focusing and anomalous broadening of the pulse spectrum, the mechanism of which has been inadequately investigated, were also observedin a number of experiments. The bibliography has 9 entries.

1/1

USSR

AKHMANOV, S. A., ORLOV, R. Yu., SKIDAN, I. B., and TELEGIN, L. S.

"Formation of Subpicosecond Pulses in the Ultraviolet Range by Multiple Nonlinear Transformations"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 16, No 8, 20 October 1972, pp 471-475

Abstract: This article describes an oscillator of ultrashort pulses in the wavelength range of 0.26 to 0.28 microns, with the pulses having a width of less than $0.5 \cdot 10^{-12}$ seconds and a power of approximately 10 MW. To generate these pulses, the radiation frequency of a picosecond laser using glass with Nd^{3+} was twice doubled. The basic advantage of the method described in this letter is the improvement in the pulse-train structure that can be achieved in the process of multiple nonlinear transformations. A diagram of the experimental apparatus consisting of a picosecond pulse oscillator using LGS-1 glass and two frequency doublers, is given. The pulses thus produced can be used as pumping sources for ultraviolet lasers for determining the relaxation time of electronic levels and for investigating nonstationary, nonlinear effects. The authors are connected with the M. V. Lomonosov State University of Moscow.
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USSR

UDC 613.644:612.766.1

SKIDAN, M. A., Kiev Institute of Labor Hygiene and Professional Diseases

"Application of the Conditioned Reflex Method Used in the Investigation of the Motor Analysor for Hygienic Evaluation of the Labor Pattern Under the Influence of Vibrations"

Kiev, Fiziolohichnyy Zhurnal, Vol 19, No 4, Jul/Aug 73, pp 543-544

Translation: Under laboratory conditions patterns of vibrational effects were reproduced characteristic of the work with vibro-instruments. To characterize physiologically different patterns of interrupted vibration effect, a complex method for the investigation of the functions of the human motor apparatus, proposed by V. M. Tralov, has been applied for the first time. The experiments carried out showed that this method makes it possible to determine objectively that an interrupted vibration with the pattern 3 min vibration -- 3 min rest showed more undesirable effects on the human organism than the pattern 3 min vibration -- 6 min rest.

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1/2 041 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--RESONANCE BROADENING OF THE L SUBALPHA LINE OF HYDROGEN -U-

AUTHOR-(02)-SKIDAN, V.V., SHREYDER, YE.YA.

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(4), 627-9

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ABSORPTION SPECTRUM, ABSORPTION COEFFICIENT, LIGHT ABSORPTION, HYDROGEN, HIGH FREQUENCY DISCHARGE, LINE WIDTH, GAS PRESSURE, RESONANCE ABSORPTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1481 STEP NO--UR/0051/70/028/004/0627/0629

CIRC ACCESSION NO--AP0118470

UNCLASSIFIED

2/2 041 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118470

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. OPTICAL ABSORPTION INVESTIGATION WAS CARRIED OUT ON THE WIDTH OF THE DISPERSION COUNTOUR OF THE H L SUBALPHA RESONANCE LINE. THE ABSORPTION COEFF. WAS MEASURED BY USING AT. H AND THE LIGHT FROM A HIGH FREQUENCY DISCHARGE IN A MIXT. OF HE AND D. H WAS COMPLETELY DISSOCD. ABSORPTION INCREASED WITH INCREASING CURRENT AND REACHED SATN. THE WIDTH OF THE LINE DEPENDS LINEARLY ON PRESSURE.

UNCLASSIFIED

USSR

POPOV, V. A. and SKIDANENKO, V. I.

"Dependence of the Resonant Frequency of Biaxial Antiferromagnetics on the Temperature"

Leningrad, Fizika Tverdogo Tela, vol 15, No 3, 1973, pp 899-901

Abstract: The intersection of two branches of the resonance frequency curves occurs in biaxial ferromagnetics in a strong magnetic field at a particular temperature. In this paper, the dependence of the energy spectrum of biaxial ferromagnetics in a strong magnetic field on the temperature is computed. It is shown that the disappearance of the intersection point of the resonance terms is apparently connected with the fact that the activation energy of one branch of the spin waves is higher than the energy of the other everywhere in the thermodynamic stability region of the antiferromagnetic vector perpendicular to the "easy" axis. The authors begin their analysis with the Hamiltonian of the biaxial antiferromagnetics in a magnetic field whose direction is parallel to the "easy" axis. An expression for the energy spectrum of the spin waves in terms of the temperature is then obtained.

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USSR

POPOV, V. A., SKIDANENKO, V. I. (Togliatti Polytechnical Institute)

"Phase Transitions and Critical Points in a Biaxial Antiferromagnetic"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, March 1974, pp 387-396

Abstract: Phase reversal of magnetic sublattices in a biaxial antiferromagnetic, with the magnetic field directed along the "easy" and "difficult" planes, is studied.

The existence of a critical first-order point is shown for the case in which the magnetic field is directed along the "easy" plane. Behavior of solutions for the antiferromagnetic ground state and features of the magnetic susceptibility tensor near the critical first-order point are examined.

The antiferromagnetic ground states are found, and conditions for realizing the first- and second-order phase transitions, when the magnetic field is directed along the "difficult" plane, are determined. The phase diagram shows the critical triple and quadruple points and a special triple point at which the character of the phase transition changes.

The article includes 37 equations and one figure. There are 11 references.

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USSR

POPOV, V. A., SKIDANENKO, V. I.

"Coupled Spin Waves and Spin-Spin Resonance in Antiferromagnetics"

Leningrad, Fizika Tverdogo Tela, Vol 14, No 2, 1972, pp 507-514

Abstract: The transformation of spin waves of one polarization into spin waves of another in two-axis antiferromagnetics in a diagonal magnetic field is considered. It is shown that antiferromagnetics as a whole represent two oscillatory systems which remain uncoupled with a constant field directed along the axis of symmetry. They are, however, coupled in a diagonal field. If only one of the oscillatory systems is pumped by the energy of a high-frequency field, there is a transfer of high-frequency energy into the second oscillatory system due to the coupling between the two. It is found also that this transfer is a maximum when the coupling factor reaches a critical value. The conditions for resonance transformation of one spin wave to the other and for the change of shape of the resonance curves are analyzed. The possibility of

1/2

USSR

POPOV, V. A. et al, Fizika Tverdogo Tela, Vol 14, No 2, 1972, pp 507-514

using antiferromagnetics as high-frequency filters under spin-spin resonance conditions, with the width of the pass band controlled by the angle between the field and the crystal axis of symmetry, is indicated. The authors are grateful to G. A. Smolenskiy for his discussions and to A. S. Borovik-Romanov, V. A. Ozhogin, and Ye. G. Radashevskiy for their valuable comments. They are connected with the Physico-Technical Institute for Low Temperatures, USSR Academy of Sciences, Kharkov.

2/2

USSR

SKIMEL', V. N.

"Rigidity Property of Certain Gyroscopic Systems"

Tr. Kazan. aviats. in-ta (Works of Kazan' Aviation Institute), 1970, vyp. 119, pp 70-82 (from RZh-Mekhanika, No 1, Jan 71, Abstract No 1A123 by L. M. Markhashov)

Translation: The article gives a definition of gyroscopic rigidity of mechanical systems, which definition reduces, for concrete systems, to the concept studied by D. R. Merkin, viz. pseudostationarity in positional coordinates of motion of certain gyroscopic systems with cyclic coordinates, given sufficiently great spin velocities. Using the methods of analytic mechanics and the ideas of Lyapunov, the author formulates and proves a gyroscopic rigidity theorem for a wide class of stationary motions of gyroscopic systems. The use of a Lyapunov function of suitable form permits effective construction of estimates for disturbed motions and the obtaining of new conclusions regarding the properties of certain concrete gyroscopic systems.
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USSR

DONIN, A. B., SKINDER, B. I. UDC: 8.74

"An Effective Method of Organizing Data Blocks in an Automated Control System"

Kiev, Avtomatiz. sistemy upr. proizvom--sbornik (Automated Production Control Systems--collection of works), 1972, pp 12-22 (from RZh-Kibernetika, No 7, Jul 73, abstract No 7V628 by V. Mikheyev)

Translation: A method of effective arrangement of data block structure is proposed which is based on the following approach. The processing of data blocks in automated control systems involves the necessity of intensive utilization of external computer storage devices. In this connection expenditures of machine time depend to a great extent on the makeup of the requisites entering the data blocks. The process of selecting an optimum version of data block composition is usually a combinatorial problem whose realization is considerably complicated by the large number of variants which arise in this case. It is proposed that the variants be partially sorted with a solution on each step which is improved in comparison with the preceding cycle. A solution of the

1/2

USSR

DONIN, A. B., SKINDER, B. I., Avtomatiz. sistemy upr. proiz-vom, 1972, pp 12-22

problem is understood to mean a process of handling data blocks to produce some output document or message based on some set of requisites occurring in the given data block and fixed for the given problem. Formation of a data block is understood to mean the process of choosing from the entire set those requisites carried on primary media or entering from terminal devices and intended for machine processing of some fixed group which comprises the given block in accordance with certain considerations, and recording them in the external computer storage in standard format. The accuracy of the information is computer checked.

2/2

USSR

UDC: 551.596:534.143

POLYANSKAYA, T. V., SKIPA, M. I.

"Models of Hydroacoustic Signals Formed Close to the Bottom"

Moscow, Tezisy dokl. 3-y Vses. shkoly-seminara po stat. gidroakustike, 1971 --sbornik (Abstracts of Papers of the Third Soviet-Wide Seminar-School of Statistical Hydroacoustics, 1971--collection of works), 1972, pp 337-343 (from RZh-Fizika, No 5, May 73, abstract No 5Zh642 by V. P. Sukhin)

Translation: The authors consider two approaches to constructing a mathematical model of hydroacoustic signals -- the wave approach and the phenomenological approach. Analysis of the wave model showed that the process of signal formation close to the bottom can be qualitatively characterized; quantitative evaluations require knowledge of supplementary initial data which make solution of the wave equation extremely difficult. The phenomenological approach to analysis of wave equations enables treating the bottom signal as quasideterministic and synthesizing its structural model with random amplitude and phase modulation.

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SKIPETROV, Pavel Aleksandrovich CPSU

SKIPETROV, Pavel Aleksandrovich CPSU
VOLKOV, M.

PARTY CRITICISM LEVELED AT ECONOMICS INSTITUTE OF USSR ACADEMY OF SCIENCES

[Article by P. Skipetrov, Head, Sector, Division of Science and Educational Institutions of the CC CPSU, and M. Volkov, Consultant to the Division of Science and Educational Institutions of the CC CPSU, Moscow, Literaturnaya Gazeta, Russian, No 9, February 1972, pp 11-12]

Under the leadership of the Communist Party, the Soviet people are striving to implement the grandiose tasks in communist construction advanced by the 24th Congress of the CPSU for the successful fulfillment of the Ninth Five-Year Plan for the development of the USSR national economy. The development of Marxist-Leninist economic theory, whose influence on economic life is mounting under present conditions, will play an important part in the resolution of these problems.

The 24th Congress of the CPSU called upon the science of economics to make a decisive change in its study of the urgent problems of communist construction, to bring scientific research into greater conformity with party policy, with the activity of party and government organs in the elaboration of a strictly scientific, integrated approach to the resolution of the key economic problems for the immediate and more distant future.

Among the measures enacted by the CC CPSU for implementing the decisions of the 24th Party Congress in the realm of the science of economics, an important place belongs to the decree entitled "Concerning the Work of the Party Organization of the Institute of Economics of the USSR Academy of Sciences in Fulfilling the Decree of the CC CPSU 'On Measures for the Further Development of the Social Sciences and for Elevating Their Role in the Building of Communism.'" The former decree is presently under discussion by the party organizations of scientific research institutes in the humanities and of vuz social science departments. The decree is important in many ways.

- 11 -

1/2 023 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--APPARATUS FOR IMPREGNATING PACKS OF GLASS FABRIC WITH A BINDER -U-

AUTHOR-(03)-SKIPIN, V.A., DORDSHENKO, I.V., KOVALEV, V.A.

COUNTRY OF INFO--USSR

SOURCE--KHIM. NEFT. MASHINOSTR. 1970, (2) 40-1

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--GLASS FABRIC, SHIPBUILDING ENGINEERING, REINFORCED PLASTIC/(U)ASTTBSO IMPREGNATED LGASS FABRIC, (U)TZHS GLASS MAT, (U)NPS609 21 BINDER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1504 STEP NO--UR/0314/70/000/002/0040/0041

CIRC ACCESSION NO--AP0112498

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--02OCT70

2/2 023

CIRC ACCESSION NO--AP0112498

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN AUTOMATIC IMPREGNATING APP. UPS-1 WAS DEVELOPED AND TESTED BY THE LENINGRAD CENTRAL SCIENTIFIC RESEARCH INSTITUTE OF SHIPBUILDING TECHNOLOGY. THE APP. WAS USED TO IMPREGNATE GLASS FABRIC ASTT(B)-S SUB2-0 AND GLASS MAT TZHS-0.7-0 ROLLS WITH AN NPS-609-21 BINDER AT 2.7 M-MIN. UPS-1 INCREASED THE OUTPUT 10 FOLD (COMPARED WITH MANUAL OPERATION) AND IMPROVED THE QUALITY OF THE IMPREGNATED PRODUCT.

UNCLASSIFIED

Acc. Nr:
AP0036812

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PRIMARY SOURCE: Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, 1970, Nr 1, pp 31-35

DYNAMICS OF DISCHARGE OF TYPHOID BACILLI IN CHRONIC CARRIERS IN DIFFERENT SEASONS OF THE YEAR AND ITS SIGNIFICANCE IN THE EPIDEMIOLOGY OF THE DISEASE

S. R. Khomik, Ya. M. Ferdinand, G. I. Shirda, N. S. Kovaleva, N. S. Solovey, K. I. Popova, I. P. Timoshkina, M. M. Shelkovich, B. A. Plyuro, Apeykina, M. D.

The feces of forty five carriers of typhoid bacillus were examined in different seasons of the year. The greatest number of bacilli was discharged from January to May (0.1 to 960 million per gm of feces were the number of bacilli found throughout the year). Therefore, the authors recommend examination of carriers to be carried out mainly during the first half of the year.

There was established no association between the seasonal distribution of the incidence of the disease and the intenisity of bacterial discharge.

D.W.

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REEL/FRAME
19721729

1/2 025 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--SHAPE OF THE ENERGY SPECTRUM OF DELTA ELECTRONS KNOCKED OUT BY FAST SINGLY CHARGED PARTICLES FROM ATOMS OF ELEMENTS CONTAINED IN NUCLEAR

AUTHOR--SKIRDA, N.V.

COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(1), 192-9

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ENERGY SPECTRUM, ELECTRON, CHARGED PARTICLE, NUCLEAR EMULSION, COLLISION, ATOM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1980/0184 STEP NO--UR/0367/70/011/001/0192/0199

CIRC ACCESSION NO--AP0046476

UNCLASSIFIED

2/2 025 UNCLASSIFIED

CIRC ACCESSION NO--AP0043476 PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SUBDIVISION OF COLLISIONS INTO CLOSE AND DISTANT COLLISIONS ENABLES ONE TO SIMPLIFY THE COMPUTATIONS OF SPECIFIC IONIZATION LOSSES. ENERGY DISTRIBUTIONS OF DELTA E WHICH ARE PRODUCED BY SINGLY CHARGED PARTICLES IN NUCLEAR PHOTOEMULSION ARE CALCD. SEP. FOR THE 2 TYPES OF COLLISONS. THE SIMPLEST APPROACH TO THE PROBLEM OF DISTANT COLLISONS IS THE APPLICATION OF THE WILLIAMS WEIZSAECKER METHOD IN WHICH SUCH COLLISIONS WHEN LEADING TO IONIZATION ARE TREATED AS A PHOTOELEC. ABSORPTION OF VIRTUAL QUANTA FROM THE FIELD SURROUNDING THE INCOMING PARTICLE. THE SPECTRUM OF DELTA E COMING FROM SUCH COLLISIONS IS INVERSELY PROPORTIONAL TO THE 4TH POWER OF THE ENERGY E OF DELTA E. THE SPECTRUM OF DELTA E FROM CLOSE COLLISIONS MAY BE CONSIDERED IN THE RANGE OF ENERGIES OF THESE E AT 0.1-250 KEV, AND FOR HIGHER ENERGIES IT VARIES AS E PRIME NEGATIVE2. E SPECTRA FROM THE 2 TYPES OF COLLISIONS ARE NOT DISCONNECTED. AT LOWER ENERGIES OF THE DELTA E THE CONTRIBUTION FROM DISTANT COLLISIONS DOMINATES AND THE TOTAL ENERGY SPECTRUM BEHAVES LIKE E PRIME NEGATIVE4, WHILE THERE EXISTS ALSO A HIGH ENERGY TAIL WHICH DECREASES LIKE E PRIME NEGATIVE2 UP TO A CERTAIN VALUE OF E SUBMAX EQUALS 2MC PRIME2 BETA PRIME2 GAMMA PRIME2, WHERE M IS THE REST MASS OF THE INCOMING PARTICLE; BETA, ITS VELOCITY IN THE UNITS OF LIGHT VELOCITY C, AND GAMMA PRIME2 EQUALS 1-(1-BETA PRIME2).

UNCLASSIFIED

USSR

SKIRKEVIČIUS, A., and VAITKEVIČIENĖ, G., Institute of Zoology and Parasitology, Lithuanian SSR Academy of Sciences

"Behavioral Mechanism of Honeybees Under the Influence of Pheromones"

Vilnius, Trudy Akademii Nauk Litovskoy SSR, Seriya V, Vol 2(62), 1973, pp 181-184

Abstract: Studies were conducted on worker bees (Apis mellifica mellifica) to establish a correlation between the histograms representing the nature of their stay in the vicinity of filter paper impregnated with a pheromone (geraniol), and the electrophysiological activity of sensory cells in the antenna and the deutocerebrum. On the assumption that neuronal activity determines subjective assimilation of the chemical stimulus by the bee and, hence, its behavior with respect to the stimulus, it would appear that decreased neuronal activity would have a negative effect on the bee's attraction to the chemical stimulus and could therefore be correlated with the bee's departure from the filter paper.

SKIRKO, B. K.

JPRS 55569
19 May 72

UDC: 613.2:615.355:664

HYGIENIC INVESTIGATION OF ENZYME PREPARATIONS USED IN THE FOOD INDUSTRY

[Article by A.M. Ivantsiyiv, B.K. Skirko, V.Ya. Vinogradova, Institute of Nutrition, USSR Academy of Medical Sciences, Moscow; Moscow, Voyenik Akademii Meditsinskikh Nauk SSSR, Russian, No 2, 1972, pp 15-27]

Hygienic investigation and control of the use of enzyme preparations of bacterial origin for use as additives to foods is a complex problem with national economic significance. The advances in modern enzymology and microbiology, their practical use in the food industry, are related to elaboration of technological procedures for producing enzyme preparations varying in degree of purification. At the present time it is generally conceded that it is the most purposeful to recommend preparations obtained from mold fungi and bacteria for use as hydrolytic enzymes and complexes thereof in the food industry.

In the Directives of the 24th Congress of the CPSU pertaining to the Five-Year Plan of development of the national economy, attention is given to future growth of production of enzyme preparations, and to the need to broaden the assortment thereof considerably. The production of enzyme preparations obtained from fungi and bacteria is one of the main branches of modern microbiological industry. Hygienic investigation of enzyme preparations is an important area of hygiene of nutrition and prevention of alimentary disease. The results of investigating the possibility of making practical use of enzyme preparations from the standpoint of preventive medicine permit development of the appropriate recommendations to public health agencies with regard to the desirability of allowing (or banning) their use in the food industry.

With regard to the economic effect of broader use of enzymes, we could cite here the pronouncement of A.N. Tayurovskiy, that this effect could amount to billions of rubles in our country. It must be noted that even more attention has been paid to this problem in recent times. In 1970, the comprehensive monograph by V.L. Yarovenko et al. was published, Proizvodstvo Fermentnykh Preparatov iz Gribov i Bakteriy (Production of Enzyme Preparations out of Fungi and Bacteria), and it summarized the problems related to development and present status of this problem. The Main Administration for the Microbiological Industry under the USSR Council of Ministers has published special surveys

UNCLASSIFIED PROCESSING DATE--17JUL70

TITLE--BIOLOGICAL ACTION OF FLUORESCENT SUBSTANCES ISOLATED FROM THE MOLD ASPERGILLUS NIGER -U-

AUTHOR--SKIRKO, B.K., NESTERIN, M.F., VISSARIONOVA, V.YA.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69, NR 2, PP 44-46

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--FLUORESCENCE, CHROMATOGRAPHY, ASPERGILLUS, ENZYME ACTIVITY, FOOD INDUSTRY, LIVER, BILE, FOOD INDUSTRY, WHITE RAT, PROTEIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1982/0406 STEP NO--UR/0219/70/069/002/0044/0046

CIRC ACCESSION NO--AP0051923

UNCLASSIFIED

Acc. Nr: AP0051923 Ref. Code: UR0219

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i Meditsiny, 1970, Vol 69, Nr 2, pp 44-46

BIOLOGICAL ACTION OF FLUORESCENT SUBSTANCES ISOLATED FROM THE MOLD *ASPERGILLUS NIGER*

B. K. Skirko, M. F. Nesterin, V. Ya. Vissarionova

Institute of Nutrition, Academy of Medical Sciences of the USSR, Moscow

Extraction and preparative chromatography was used to isolate fluorescent substances from the mold *Aspergillus niger*. Experiments on albino rats testified to their toxic hepatotropic action: when given orally, they induce protein dystrophy of the liver parenchyma and proliferation of the bile ducts epithelium. If the mold *Aspergillus niger* is used as a sourse for enzyme preparations to be used in food industry, the preparation must be washed of fluorescent contaminants.

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2pc

USSR

UDC: 621.398.08

MIKUTSKIY, G. V., IZRAILEV, R. A., and SKITAL'TSEV, V. S. [All-Union Scientific Research Institute of Electric Power]

"Device for Frequency-Division Multiplex"

USSR Author's Certificate No 291365, filed 24 Jul 69, published 24 Feb 71 (from RZh-Avtomatika, telemekhanika i vychislitel'naya tekhnika, No 12, 1971, Abstract No 12A242P)

Translation: A device is patented for frequency division multiplex of high-frequency communication channels for the transmission of telephone, telemetering, and automation signals from dispersed objects, by an energy system containing transmitters, receivers, and filters of telemetering and automation signals. The device differs in that, for the purpose of providing independence of the telephone, telemetering, and automation signals with a reduction in the amount of individual equipment of the channels, the transmitters are connected to the intermediate frequency strip of the communication equipment at a point between the output of the filter and the input of the second modulator, while the receivers are connected to a point between the output of the first modulator and the input of the i-f filter; the frequencies of the telemetering and automation channels are put in the i-f spectrum of the communications equipment in the interval between the extremes of the telephone communication channel bands.

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USSR UDC: (621.391.82:621.396.44):621.317.743(088.8)

BERKMAN, N. A., ZOLOTAREV, Ya. M., PONOMERENKO, V. A., RAKHLIN, Ya. A., SKITOV, I. I., STEKLOVA, I. P.

"A Device for Analyzing Pulse Noises and Interruptions in a Communications Channel"

USSR Author's Certificate No 266858, filed 12 Dec 67, published 15 Jul 70 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2A294 P)

Translation: Conventional devices for measuring and analyzing pulse noises and interruptions in communications channels are designed for studying telephone channels in the 300-3400 Hz range and group channels in high-frequency telephony systems in the 60-108 kHz range. These devices are unsuited for studying channels in the 312-550 kHz range, and moreover they do not give the required resolution and are not distinguished by high reliability. It is proposed that a short-pulse clamping unit be connected between the selector and quantizing modules with a quantizing pulse oscillator output connected to the controlling input of the clamper through a delay element. A pulse time gradation module is connected between a binary counter and the coincidence circuits of the pulse duration analyzer. When the device is operating in the pulse noise analysis mode, it is connected to a free

BERKMAN, N. A. et al., USSR Author's Certificate No 266858

channel; when operating in the interruption analysis mode, the device is connected to a channel through which a measurement frequency signal is transmitted. A. K.

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USSR

UDC 543.275.2.082

OGORODNIKOV, B. I., SITALO, Ye. A., SKITOVICH, V. I., KONSTANTINOV, I. Ye.,

"Development of Method of Determination of Dispersed Composition of Radioactive Aerosols Using FP Filter Material"

Tr. In-t Eksperim. Meteorol. Gl. upr. Gidrometeorol. Sluzhby pri Sov. Min. SSSR [Works of Institute of Experimental Meteorology, Main Administration of Hydrometeorological Service, Counsel of Ministers, USSR], 1972, No 25, pp 76-80, (Translated from Referativnyy Zhurnal, Metrologiya i Izmeritel' naya Tekhnika, No 7, 1972, Abstract No 7.32.902, by V.S.K.).

Translation: A review of the influence of filtration rate, aerosol particle and filter fiber diameter and filter layer thickness on effectiveness of trapping of aerosols. It has been found that the preferential holding of aerosols of a given range of dimensions is possible in successive layers of a filter material if the parameters of the filtering process are changed. The results of experimental determination of the filter characteristics of FPP-3, FPP-70 and FPA-100 materials involving studies of the dispersed composition of artificial radioactive aerosols are presented. 2 Figures; 2 Tables; 5 Biblio. Refs.

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USSR

UDC 619:616.9-097:616.981.42-636.39

IVANOV, M. M., TAVAMAYSHVILI, M. YE., and SKLADCHIKOV, R. V., State Scientific Control Institute of Veterinary Preparations

"Immunomorphological Shifts in Goats Affected With Brucellosis"

Moscow, Veterinariya, No 10, 1971, pp 42-44

Abstract: Vaccination of adult goats and kids 4- to 5-months old with GNKI Brucella abortus 19 strain, Br. abortus 19, or Br. melitensis 2,506 produced morphological changes in the lymph nodes and organs typical of brucellosis. The changes were more pronounced in adults. Injection of immune animals with a virulent strain of Brucella elicited moderate benign cellular reactions in the remote lymph nodes and spleen. In general, the level and intensity of the pathomorphological changes varied with the level of immunity created by the vaccine.

1/1

SKLADCHIKOVA, Ye.

MEDICINE

29 Jan 71 52 FTD:SOVIET SCIENCE

45. USSR

SKLADCHIKOVA, Ye., chief physician of Oblast Clinical Hospital No 1 "Kosmovo Center"

Moscow, Meditsinskaya Gazeta, 7 Aug 70, p 3

Translation: An Interoblast center for kidney transplants has been created at Kosmovo Oblast Clinical Hospital No 1. The center is headed by T. Shroyer, head of the Chair of Faculty Surgery of the Kosmovo Medical Institute and professor.

The creation of the center was dictated by the availability of well-equipped laboratories and a technical engineering group, and by accumulated experience in treating acute kidney insufficiencies.

A group of new structural subdivisions has been created: a kidney transplant department, an injection cubicle for postoperational patients, and a laboratory of chronic hemodialysis. The hospital's radioisotope laboratory, in which the function-

1/2

USSR

SKLADCHIKOVA, Ye., Meditsinskaya Gazeta, 7 Aug 70, p 3

ing of physicians -- nephrologist, an urologist, and a physician from the laboratory of chronic hemodialysis. Specialized beds have been set aside in the therapeutics and children's departments.

Control of the organization of the dispensary system for patients suffering from nephritis and similar diseases is carried out. Branch [Mustovyye] sessions and conferences are conducted, the incidence of illness among the population is studied, and patients needing kidney transplants are discovered.

The first kidney transplant operations have already been performed. The center's entire collective -- physicians, nurses, technicians, and junior medical personnel -- are working reliably.

2/2

USSR

UDC 669.162.267.645

LEVIN, M. Z., MACHIKIN, V. I., SKIADANOVSKIY, YE. N., KUZUB, A. G., and KRASAVTSEV, I. N., Donetsk Polytechnic Institute, Donetsk Metallurgical Plant

"Desulfuration of Pig Iron with Regulatable Introduction of Ingotted Magnesium"

Moscow, Metallurg, No 2, Feb 73, pp 10-12

Abstract: From 1970 on, studies have been conducted at the Donetsk Metallurgical Plant and Donetsk Polytechnic Institute on the Development of equipment for use in the desulfuration of pig iron by regulated introduction of magnesium ingots. A new method of introducing the ingotted magnesium into liquid pig iron serves as the basis of the equipment. Diagrams show the equipment for regulated magnesium introduction and a schematic of the gas supply to the evaporator. Industrial test results are given. Two figures, one table.

1/1

UDC 576.809.56

USSR

AMBROSOV, V. A., VASIL'YEV, N. N., and SKLADNEV, A. A., Moscow Technological Institute of the Food Industry

"Mathematical Model of the Reproduction of Microorganisms Under Conditions of Periodic Cultivation"

Moscow, Prikladnaya Biokhimiya i Mikrobiologiya, Vol 6, No 4, Jul/Aug 70, pp 363-374

Abstract: On the basis of an analysis of the role of thermodynamic factors in the kinetics of reproduction of prototypes, N. I. Kobozev proposed a model of a reversible autocatalytic process in 1962. In the present study, several aspects of this model are analyzed and defined concretely as applied to the growth of microbial populations. The mechanism of microbial reproduction in a dynamic cell-medium system under conditions of periodic cultivation is reflected in the model by the function $(n-1)M + X \xrightleftharpoons[k_2]{k_1} nX$,

where n is the number of "cellular units" in substrate M and cells X; k_1 is the constant of the rate of formation of the biomass, characterizing the specific rate of synthesis in the cells; and k_2 is the constant of the rate of dying off characterizing the rate of disintegration of the cells. In other words, microbial cell

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USSR

AMBROSOV, V. A., et al, Prikladnaya Biokhimiya i Mikrobiologiya, Vol 6, No 4, Jul/Aug 70, pp 363-374

X requires (n - 1) "units" of substrate M to form n new cells. Methods of determining the parameters of the model are discussed, and the results of experiments with Candida intermedia, Brevibacterium sp. 22, and Saccharomyces cerevisiae to test the adequacy of the model are summarized.

2/2

USSR

UDC: 69.001.5:621.311.21.(282.251.2)

BLINKOV, V. V., SKLADNEV, M. F. and SHCHAVELEV, N. F., Candidates of Technical Sciences, ROZANOV, N. S., Doctor of Technical Sciences, and KHLEBNIKOV, N. V., Engineer

"Scientific Research Work for the Krasnoyarsk Hydroelectric Power Plant"

Moscow, Gidrotekhnicheskoye Stroitel'stvo, No 9, Sep 72, pp 6-10

Abstract: A great deal of scientific research work was done as the basis for the plan and the construction of the Krasnoyarsk hydroelectric power station. The organization of this research and introduction of its results, designed to assure the reliability of structures and increase the technical and economic indicators of the power plant, were possible due to the close, creative cooperation between planners, constructors, scientists and operating personnel. Many of the results of the studies performed are of significance not only for the Krasnoyarsk power plant, but also for many large hydroelectric power plants under construction, in planning or design. The Krasnoyarsk hydroelectric power plant, the world's largest, is and remains one of the primary experimental bases for Soviet water engineering science. Studies included both model-scale studies and tensometric and other studies of the actual power plant during various stages of construction.

1/1

UDC 061.62.06.091.5(470.23-21)

USSR

SKLADNEV, M. F., Honored Scientist and Engineer of the RSFSR, Director of the All-Union Scientific Research Institute of Hydraulic Engineering imeni B. Ye. Vedeneyev

"Fiftieth Year of the All-Union Order of the Labor Red Banner Scientific-Research Institute of Hydraulic Engineering imeni V. B. Vedeneyev"

Moscow, Gidrotekhnicheskoye stroitel'stvo, No. 5, May 72, pp 51-54

Abstract: The 50th anniversary account of the history of the Institute is given. In 1958 the institute was named the major institute in the field of hydraulic engineering instruction and it was assigned the coordination of research work carried out by different scientific and planning organizations and higher educational institutions of the country. In the last 10 years there have been created the Siberian Affiliate in Krasnoyarsk, and departments of the institute in Dneprodzerzhinsk, Ivangorod, and Narva. As of January 1972, 1,800 persons worked at the institute, including 21 doctors of technical sciences, 119 candidates of technical sciences, and more than 1,100 engineers and technicians. There are presently 68 people engaged in post-graduate study under the institute. After describing

USSR

SKLADNEV, M. F., Gidrotekhnicheskoye stroitel'stvo, No. 5, May 72, pp 51-54

past activities and achievements the article lists the following current activities of the institute: development of measures for the most effective use of hydraulic power resources and the introduction of advanced designs and methods, work on problems of the construction of high-power thermoelectric and atomic energy stations and the development of an experimental base for solving problems in water cooling, the development of research on problems of hydraulic construction in the Far North, research on problems of combatting the harmful effects of water and on the utilization of water resources, and coordination with other organizations to lower the cost of power and hydraulic structures.

2/2

USSR UDC: 621.375.82

BOYKO, V. A., KROKHIN, O. N., SKLIZKOV, G. V.

"Investigation of the Parameters and Dynamics of a Laser Plasma"

Moscow, Issledovaniye parametrov i dinamiki lazernoy plazmy. Fiz. in-t AN SSSR. Lab. kvant. radiofiz. (cf. English above. Physics Institute of the Soviet Academy of Sciences. Quantum Radiophysics Laboratory), Preprint No 121, 1972, 132 pp, ill., mimeo. (from RZh-Fizika, No 8, Aug 73, abstract No 8D1108 by E. B.)

Translation: The authors make a survey of experimental research dealing with the interaction between laser emission and the surface of a target. As a rule, the experiments described are done with sharp focusing of the beam onto a massive target. A study is made of the parameters of the hot phase of the jet: i.e., the plasma which is directly heated by the laser emission close to the surface of the target. An investigation is made of the variation of the main parameters of the plasma (temperature, density, linear dimensions, lifetime, effective charge of ions) with space and time and their relations to the characteristics of laser emission. A considerable portion of the experimental data obtained on the laser jet relate to the mode of gasdynamic motion where the density of the hot plasma is no greater than 10^{20}-10^{23}. From the standpoint

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BOYKO, V. A., et al., Issledovaniye parametrov i dinamiki lazernoy plasmy. Fiz. in-t AN SSSR Lab. kvant. radiofiz, Preprint No 121, 1972, 132 pp.

of thermonuclear applications the most promising is the mode of thermal conduction with inertial plasma containment, which is achieved with a heating pulse duration of 10^{-9} sec and flux densities of 10^{15}-10^{16} W/cm^2. The plasma thus formed has a temperature of several kev and a density of 10^{23}, which satisfy conditions of thermonuclear fusion. Possible trends in research to achieve the mode of thermal conduction are considered. Bibliography of 172 titles.

2/2

SKLIZKOV, G.V.

LASER

(3)

JPRS 61636

2 April 1974

Bible

STUDY OF THE PARAMETERS AND DYNAMICS OF A LASER PLASMA

[Book by V.A. Boyko, O.N. Krokhin, and G.V. Sklizkov; Issledovaniye parametrov i dinamiki lazernoy plazmy; Preprint No. 121, 1972, Order of Lenin Physics Institute imeni P.N. Lebedev Laboratory of Quantum Radiophysics, signed to press 14 September 1972, 132 pages]

1. Introduction

The problem of heating a material to thermonuclear temperatures by means of powerful thermonuclear laser emission [1] stimulated numerous studies of a plasma formed both when irradiating the surface of the condensed material in a vacuum-laser flame and for optical breakdown in the gases -- a laser spark.

In addition to the thermonuclear applications, prospective applications of a laser plasma have also arisen, such as, for example, its use as the source of multicharged ions for spectroscopic research of astrophysical interest, for acceleration equipment when studying the formation of new super-heavy elements, and so on.

The interest in a laser plasma increases as higher and higher temperatures are reached. This has become possible as a result of the rapid progress in laser engineering: in recent years, the power of lasers has increased on the average by an order a year. The peculiarity of a laser plasma is the high rate of energy generation essentially greater than in pulse units. Now the energy release power is more than 10^{12} watts, the energy density in the plasma is $\sim 10^{7}$ joules/cm^3, the specific energy release rates $\sim 10^{19}$ watts/cm^3. For comparison, let us present the corresponding figures for the most powerful devices of the "plasma focal point" type $\sim 10^{9}$ watts, $\sim 10^{4}$ joules/cm^3, $\sim 10^{11}$ watts/cm^3, and the specific energy consumption of explosives $\sim 10^{4}$ joules/cm^3.

Recently, a large number of both theoretical and experimental studies have been published on the subject of laser plasmas. The experimental studies of the physical conditions existing in a laser flare can be now separated somewhat provisionally into two steps. The basic result of the first step (1964-1967) is establishment of the fact of the existence of a dense and relatively hot plasma near the target surface capable of emitting ions with an energy of ~ 1 kev, the formation of severe shock waves in the atmosphere surrounding the

(3)

USSR UDC: None

BASOV, N. G., BOYKO, V. A., ZAKHAROV, S. M., KROKHIN, O. N., MIKHAYLOV, Yu. A., SKLIZKOV, G. V., and FEDOTOV, S. I.

"Mechanisms of Neutron Generation in a Laser Plasma"

Moscow, Pis'ma v ZhETF, vol 18, No 5, 5 September 1973, pp 314-317

Abstract: This letter gives the results of experiments performed to investigate the mechanisms which give rise to neutrons in laser plasmas. The experiments here described proved that, depending on the experimental conditions, both hot and cold neutrons are produced. The measurements involved were conducted in a variant of the sharp focusing of a single-channel laser on a massive CD_2 target, as well as in spherically symmetrical irradiation of CD_2 particles measuring about 100 μ in diameter by the output of a multichannel laser. Both methods were discussed in earlier papers by the first-named author above, et al (Pis'ma v ZhETF, 13, 1971, p 691; 15, 1972, p 589; ZhETF, 62, 1972, p 203). Results of both types of measurement are separately examined. Some of these cast doubt on the assertion of previous researchers that the appearance of fast ions is connected with acceleration in the critical density region.

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USSR

BASOV, N. G., BOYKO, V. A., GRIBKOV, V. A., ZAKHAROV, S. M., KROKHIN, O. N., and SKLIZKOV, G. V., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR

"Gas Dynamics of a Laser Plasma in the Process of Heating"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61, No 1(7), Jul 71, pp 154-161

Abstract: One of the two well-known approaches to the problem of heating plasma to thermonuclear temperatures by irradiating it with a laser is the method in which a substantial portion of the energy of the laser is converted into the energy of directed, gas-dynamic movement. In the present article, an attempt is made for the first time to measure the distribution of the density and speed of movement of the plasma, to evaluate the pressure of the plasma during the process of heating. A multimode, Q-switched laser and a carbon target were used, and measurements were made by slit scanning of an interferogram on an image converter. It was found that the maximum pressure (10^6 atmospheres) and temperature occur at the beginning of the laser pulse. At later times, the profile of the density is elevated, and the area of the

1/2

BASOV, N. G., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 61, No 1 (7), Jul 71, pp 154-161

plasma in which absorption takes place draws back from the target and increases. The mass of the gas heated directly by the laser beam also increases. The temperature in the hot portion drops, and an increasingly greater part of the radiation energy is converted directly into the kinetic energy of the disintegrating substance. In this manner, by varying the dependence of the dispersion of the radiation on time, it ispossible to shift the maximum pressure and to achieve optimal utilization of the laser's energy when heating plasma under real conditions.

UDC 621.373

USSR

GASOV, N. G., KROKHIN, O. N., and SKLIZKOV, G. V., order of Lenin Physics Institute imeni P. N. Lebedev

"Investigation of the Heating and Scattering Dynamics of a Plasma Formed by High-Power Laser Beam Focussed on a Substance"

Moscow, Trudy Ordena Lenina Fizicheskogo Instituta imeni P. N. Lebedev, Akadamii Nauk SSSR: Kvantovaya Radiofizika (Works of the Order of Lenin Physics Institute imeni P. N. Levedev, Academy of Sciences USSR: Quantum Radiophysics), Vol. 52, 1970, p 171-236

[Note: This volume of the "Trudy", just as volume 31, is devoted to quantum radiophysics, specifically to state-of-the-art reviews in the three main trends in quantum electronics: injection lasers, interaction of high-power laser beams with substances, and the theory of laser dynamics. Another review in the same issue, by Yu. V. Afanas'yev and O. N. Krokhin, also deals with the interaction of laser beams with metals and other solids.]

Abstract: The authors review and summarize recent literature on dense, high-temperature plasmas generated by laser pulses striking solid targets. They note that the kinetic processes occuring during the heating of substances by focussed

USSR

GASOV, N. G., et al, Trudy Ordena Lenina Fizicheskogo Instituta imeni P. N. Lebedev, Akadamii Nauk SSSR: Kvantovaya Radiofizika, Vol. 52, 1970, p 171-236

Q-modulated lasers have not been adequately explained. Moreover, contradictory data have been reported on the ion energy and on the mass of the heated substance. Heated plasmas have inhomogeneous structure, and density distributions of the vaporized substance in space and time have not been measured directly. The front of a plasma generated by a giant laser pulse can have a temperature of several hundred ev and advances at the rate of $> 10^7$ cm/sec, thereby acting as a shock piston on the surrounding gas. Theoretically, sufficient energy can be injected into a plasma to heat it to thermonuclear temperatures. The heating and expansion processes of laser-generated plasma eruptions from opaque solids are studied experimentally and theoretically. A spherical model of plasma expanding from a small laser-irradiated spot is used and gasdynamic equations are derived in analytical form. Plasma expansion dynamics were recorded with high-speed shadow photography. The target was irradiated by a neodymium laser that had a single rod 15 x 240 mm pumped by four IFP-5000 lamps. Kerr cells were used as shutters for sychronization. The energy of the laser was > 20 joules and pulse length was < 15 nsec. The experimental equipment, shown in a diagram, included gas and ruby lasers in series to supply synchronized flash illumination, and a Mach-

2/6

USSR

GASOV, N. G., et al, Trudy Ordena Lenina Fizicheskogo Instituta imeni P. N. Lebedev, Akadamii Nauk SSSR: Kvantovaya Radiofizika, Vol. 52, 1970, p 171-236

Zender interferometer was used to record the high-speed interferograms. Equipment and procedural errors are estimated. Shadographs were taken of a laser pulse having a front of ~4 nsecond striking a carbon target inside a vacuum chamber, showing that an opaque plasma eruption first spreads rapidly (3×10^6 cm/sec), followed by a complete standstill. Interference rings indicate large refraction gradients. The opaque region then disintegrates. In the later stages there is graphic evidence of streaming behind the target surface. If the shutter is removed, the laser heats the target and a vapor develops in a spherical area equivalent to the diameter of the laser spot and in 100 microsec expands to a distance of 1cm from the target surface. When the giant pulse strikes this dense cloud, a shock wave spreads into the cloud with the speed of 1.4×10^7 cm/sec in the direction of the beam and 1.2×10^7 cm/sec at right angles. Cloud densities up to 10^{18} cm^{-3} are obtained for lead, ebonite, organic glass, teflon, and aluminum foil. The formation and the behavior of the expanding spherical shock waves are discussed in detail. Expansion is found consistently to be faster in the direction of the incident beam, and turbulence grows in severity as the pressure in the vacuum chamber increases. For 5-micron thick aluminum foil a forward-moving spherical shock forms when the power is 3 joules, but at

3/6

USSR

GASOV, N. G., et al, Trudy Ordena Lenina Fizicheskogo Instituta imeni P. N. Lebedev, Akademii Nauk SSSR: Kvantovaya Radiofizika, Vol. 52, 1970, p 171-236

6 joules the beam punctures the foil and the shock spreads in both directions along the beam. Experiments were conducted on colliding shock waves. Two beams were focussed on target surfaces placed at 90 deg to each other. Increased density and velocity were observed at the intersection of the shocks. Changing the angle of incidence of the beam does not alter the direction of the plasma eruption, which remains normal to the target surface. The motion of luminous shock fronts was studied for carbon and lithium deuteride targets. Luminosity is sufficiently bright for photography above 0.2 mm Hg pressure. The luminous front velocity decreases as pressure increases. The shock front moves ahead and away from the luminous front. As the pressure rises, the luminous wave forms much quicker, and at pressures of $\sim$20 mm Hg formation is practically instantaneous. The maximum velocity of 200 km/sec is reached in air at $\sim$1 mm Hg. The distribution of electron density is measured and the total mass of heated plasma is determined. From the crater in the target, typically $\sim$0.5 mm dia, approximately 10^{-5} of material is evaporated. But this means that at 6 joules each atom receives only 7.5 ev, which is too little to explain the speed of the shock wave. Therefore, interferograms were made and electron density was plotted

4/6

USSR

GASOV, N. G., et al, Trudy Ordena Lenina Fizicheskogo Instituta imeni P. N. Lebedev, Akadamii Nauk SSSR: Kvantovaya Radiofizika, Vol. 52, 1970, p 171-236

on a graph for different directions with respect to the laser beam. The electron density is found to be spherical and the mean energy per atom is 350 ev if half the energy is assumed to be available for heating. The electron density distribution in the shock wave is investigated in detail. Pressures on the target surface as well as the concentration and conductivity of the plasma in a transverse magnetic field were measured. The system used permits measurement of the plasma temperature and allows the assumption that electron and ion temperatures are approximately equal. A transverse magnetic field of 1.2 koe has no effect on the plasma jet, at least up to 2 cm from the target. In general, giant focussed laser pulses of 10^9 to 10^{12} watt/cm^2 evaporate a small spot on a solid target and heat the erupting plasma, which is spherical and elongated in the direction of the incident beam. Comparison of measurements indicates that the jet quickly reaches a constant value and the ion energy at the edge reaches several kev. This large ion energy results from the gasdynamic acceleration of the mass at the periphery. Upon reaching a maximum size during the pulse, the spherical plasma collapses. Analysis of shadographs indicates the existence of a dense neutral gas near the surface of the target that forms within ~ 100 nsec after termination of the laser pulse. Density of the substance in the jet decreases from 2×10^{19} to 10^{17} to 10^{17} cm^{-3} in the interval of 0.5 to 3 mm from

5/6

USSR

GASOV, N. G., et al, Trudy Ordena Lenina Fizicheskogo Instituta imeni P. N. Lebedev, Akadamii Nauk SSSR: Kvantovaya Radiofizika, Vol. 52, 1970, p 171-236

the target. In the interval from 3 to 14 mm from the target, density drops from 10^{17} to 10^{12} cm^{-3}. It was found that considerable mass is ejected from the irradiated spot by a recoil mechanism when the pressure of the laser pulse is removed. This material is ejected with a velocity of $\sim 2 \times 10^5$ cm/sec. The possibility of using various target geometries to produce several shock waves to collide holds promise as a method of reaching higher plasma densities and temperatures. The high-speed multiple-frame shadow photography developed for the experiments is a powerful method for studying high-speed discharges and other processes. Also, the method permits study of the properties of high-density, high-pressure, and high-temperature process in substances without resorting to large-size high-pressure and high-temperature chambers. The authors thank V. A. Gribkov, N. A. Boyko, N. V. Morachevskiy, and S. I. Fedotov for data-gathering assistance and V. I. Frolov and B. V. Kruglov for help in constructing the experimental equipment. Orig. art. has 44 figs., 4 tables, and 73 refs.

6/6

UDC 533.916

USSR

BASOV, N. G., Academician, BOYKO, V. A., DROZHBIN, Yu. A., ZAKHAROV, S. M., KROKHIN, O. N., SKLIZKOV, G. V., and YAKOVLEV, Y. A., Physics Institute imeni P. N. Lebedev of the Academy of Sciences USSR, Moscow

"Investigation of the Initial Stage of the Gas-Dynamic Dispersion of a Laser Jet Plasma"

Moscow, Doklady Akademii Nauk SSSR, Vol 192, No 6, 21 Jun 70, pp 1248-1250

Abstract: Since previous experiments study the radiation spectra and gas-dynamic parameters of a plasma in large time intervals exceeding the length of the laser pulse, the present study covers the dynamics of the motion and the kinetics of ionization processes in a laser plasma with a high time resolution. It is noted that the gas-dynamic motion of a plasma accompanying the high-temperature heating of condensed material with focused laser radiation has been investigated because of the importance of the possible use of a laser plasma for thermonuclear fusion, as a source of multicharged ions for spectroscopic studies of astrophysical interest, for accelerator technology, etc. The study of the dispersion of a plasma during the action of a laser pulse and at distances r from the surface of the target comparable with the diameter d of the focusing spot of the laser radiation, it possible to trace different phases of the motion of the material,

USSR

BASOV, N. G., et al, Doklady Akademii Nauk SSSR, Vol 192, No 6, 21 Jun 70, pp 1248-1250

including the initial stage of heating and the "freezing" of the ionization state of the plasma. The radiation of a neodymium laser with an energy of 10 j and a half-length of 15 nsec was focused with a 5-cm lens on the surface of a carbon target in a vacuum of 10^{-6} torr, and the structure of the dispersing plasma was investigated on the basis of its luminosity. Space-time diagrams of ion dispersion were obtained from analysis of the data (see Fig.); for $r \leq 1$ mm the plasma emits a continuous spectrum in the visible region (lines are observed only at distances $r \geq 1$ mm). As the distance increases to 10 mm, a break is observed in the luminosity of ions CVI and CV from the target. The regions occupied by ions of different charges partially intersect, although there are no discontinuities in the density of material in the plasma. The following model of the gas-dynamic motion of the heated matter is constructed from an analysis of the experimental data: The plasma moves from the region of heating ($r < d$), where the electron temperature $T_e \sim 120$ ev on the basis of measurements of the recombination x-radiation, into the vacuum perpendicular to the surface with a velocity $u \sim 6 \cdot 10^6$ cm/sec. In this region the velocity of the plasma is close to the speed of sound and the ion temperature corresponding to this

2/4

USSR

BASOV, N. G., et al, Doklady Akademii Nauk SSSR, Vol 192, No 6, 21 Jun 70, pp 1248-1250

velocity is ~125 ev. A considerable acceleration of the plasma is observed at distances $r \leq 1$ mm. The velocity here is several times greater than the initial. The effect of "freezing" is obtained, since the density drops as $u^{-1}r^{-2}$ along the trajectory of the ion and the recombination time becomes much greater than the characteristic dispersion time. In one process the freezing of the maximum degree of ionization occurs several nanoseconds after the beginning of the motion of the "elementary volume" of the plasma. This freezing process also occurs for the remaining ions. The laminar structure of the jet which is observed in photographs is explained on this basis. The energy lost by the plasma contained in the region $r \leq d$ to radiation in the range 20-100 Å over a time of 40 nsec is estimated to be about 0.5 joule.

3/4

USSR

BASOV, N. G., IVANOV, YU. S., KROKHIN, O. N., MIKHAYLOV, YU. A., SKLIZKOV, G. V., and FEDOTOV, S. I., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR

"Neutron Production in Spherical, High-Power Laser Irradiation of a Target"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 10, 20 May 72, pp 589-592

Abstract: The authors recorded the neutron yield during the heating of a solid, deuterated polyethylene target subjected to spherical irradiation by a multibeam laser. It was found that the results significantly exceed those obtained during strong focusing. The size of the heated target was approximately equal to the focal spot diameter, and the heated mass was determined by the particle mass. The scheme for focusing nine laser beams on the target was similar to one previously described by the authors. The neutrons were recorded by three scintillation detectors placed at various distances from the target. Recoil-proton nuclear photoemulsions were used for the quantitative measurements. Assuming isotropism of the neutron escape from the plasma, the number of neutrons per burst was found to be equal to $3 \cdot 10^6$.

1/2

USSR

BASOV, N. G., et al., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 10, 20 May 72, pp 589-592

The authors thank V. G. LARIONOVA and L. I. [illegible]NOVA for assistance in processing the photoemulsions, and V. M. GROZNOV, A. A. YEROKHIN, N. N. ZOREV, and N. V. NOVIKOV for assisting in the work.

2/2

1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--DECREASE IN THE YIELD OF DNA DURING THE DEPROTEINIZATION OF ULTRAVIOLET OR GAMMA IRRADIATED SOLUTIONS OF DEOXYRIBONUCLEOPROTEIN. I.

AUTHOR-(02)-SKLOBOVSKAYA, M.V., RYABCHENKO, N.I.

COUNTRY OF INFO--USSR

SOURCE--RADIOBIOLOGIYA 1970, 10(1), 14-18

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--UV IRRADIATION, GAMMA RADIATION, RADIATION BIOLOGIC EFFECT, NUCLEOPROTEIN, RNA, DNA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0484 STEP NO--UR/0205/70/010/001/0014/0018

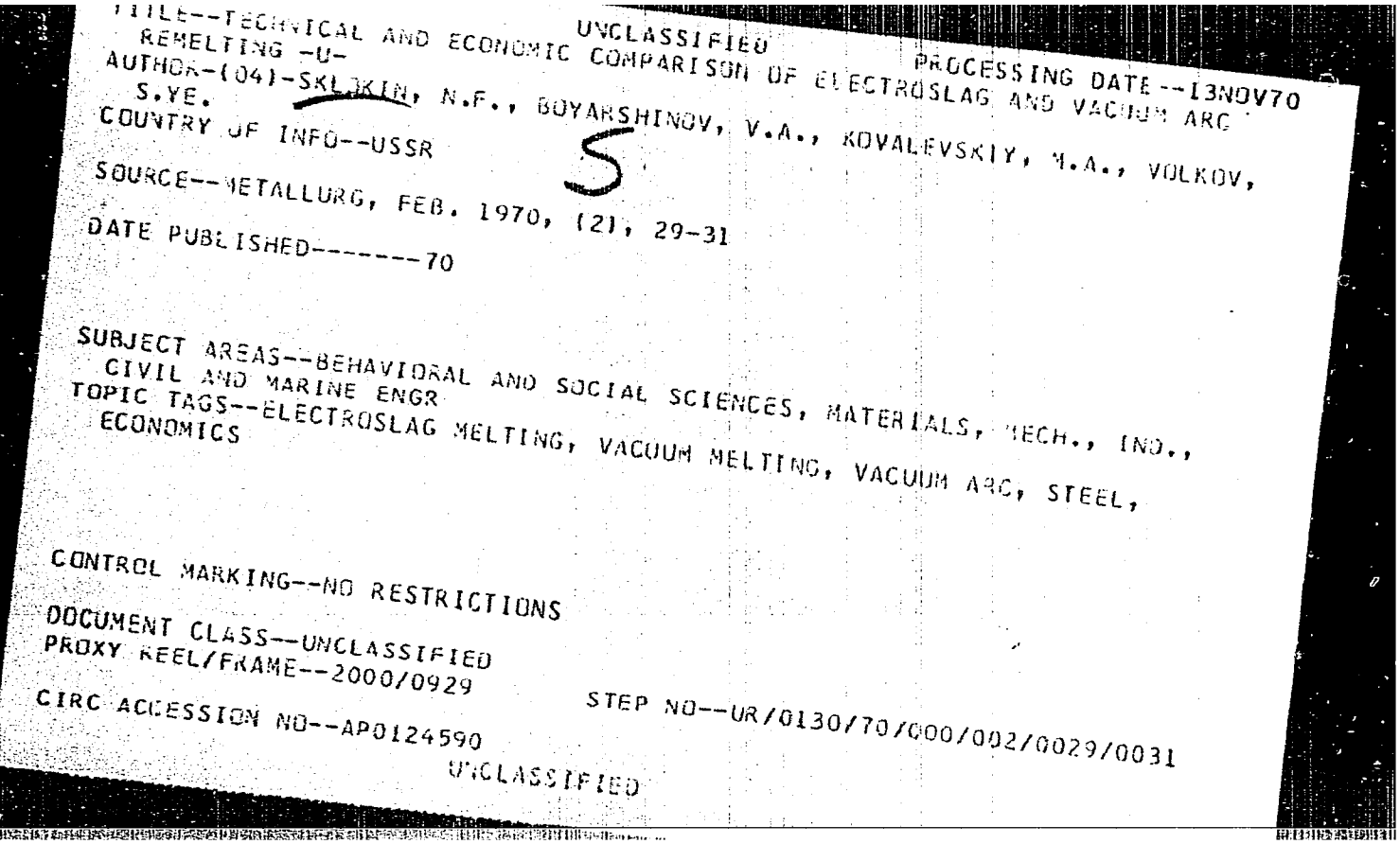
CIRC ACCESSION NO--AP0121158

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0121158
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DECREASED YIELD OF DNA WAS OBTAINED DURING THE DEPROTEINIZATION OF DEOXYRIBONUCLEOPROTEIN SOLNS. UV IRRADIATED BY DOSES OF 10 PRIME5-10 PRIME6 ERGS-MM PRIME2 OR GAMMA IRRADIATED BY DOSES OF 50-350 KR (PRIME60 CO, DOSE RATE 45 KR-SEC). THIS EFFECT DEPENDED ON THE IRRADN. DOSE AND VANISHED AFTER TREATMENT OF THE IRRADIATED DEOXYRIBONUCLEOPROTEIN SOLN. WITH TRYPSIN. THE SIZE OF THIS EFFECT DEPENDED ON THE COMPLETENESS OF THE COMPLEXING OF DNA WITH PROTEIN. EXPTS. WITH ARTIFICIAL COMPLEXES OF DNA WITH HISTONE, BLOOD SERUM ALBUMIN, OR DENATURED RNASE REVEALED THAT THE WEAKENING OF DNA PROTEIN COMPLEX (HIGHER IONIC STRENGTH OF THE SOLN., HIGHER PH, PRESENCE OF A SUBSTANCE LABILIZING THE DNA PROTEIN BOND DUE TO INTERACTION WITH ONE OF THE COMPONENTS) RESULTED IN A LESS INTENSIVE EFFECT (LOSS OF DNA) OR IN ITS DISAPPEARANCE. FACILITY: INST. MED. RADIOL., OBNINSK, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002203020019-2"



UNCLASSIFIED

TITLE--TECHNICAL AND ECONOMIC COMPARISON OF ELECTROSLAG AND VACUUM ARC REMELTING -U-

PROCESSING DATE--13NOV70

AUTHOR-(04)-SKLOKIN, N.F., BOYARSHINOV, V.A., KOVALEVSKIY, M.A., VOLKOV, S.YE.

COUNTRY OF INFO--USSR

SOURCE--METALLURG, FEB. 1970, (2), 29-31

DATE PUBLISHED-------70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES, MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--ELECTROSLAG MELTING, VACUUM MELTING, VACUUM ARC, STEEL, ECONOMICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0929

STEP NO--UR/0130/70/000/002/0029/0031

CIRC ACCESSION NO--AP0124590

UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0124590
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RIVAL MERITS OF THE ELECTROSLAG AND VACUUM ARC REMELTING OF STEELS AND ALLOYS ARE DISCUSSED, CHIEFLY FROM AN ECONOMIC POINT OF VIEW. IN GENERAL IT WOULD APPEAR THAT VACUUM ARC REMELTING IS ABOUT 1.5 TIMES AS EXPENSIVE AS ELECTROSLAG REMELTING, ALTHOUGH FURTHER OPTIMIZATION OF THE EQUIPMENT INVOLVED SHOULD NARROW THE DIFFERENCE. AT THE PRESENT TIME, VACUUM ARC REMELTING IS ONLY RECOMMENDED FOR SPECIAL CASES IN WHICH THE QUALITY OF THE RESULT OUTWEIGHS COST CONSIDERATIONS.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--23OCT70

1/2 024

TITLE--ELECTRICAL AND OPTICAL PROPERTIES OF ALLOYS OF THE (CUINTE SUB2) SUB3(INEGATIVEX)-(IN SUB2 TE SUB3) SUB2X AND (CUGATE SUB2)

AUTHOR-(05)-KOSHKIN, V.M., NESTEROVA, T.N., GALCHINETSKIY, L.P., SKLOVSKAYA, I.L., KARAS, V.R.

COUNTRY OF INFO--USSR

SOURCE--UKR. FIZ. ZH. (RUSS. ED.) 1970, 15(2), 210-16

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--OPTIC PROPERTY, TELLURIDE, INDIUM COMPOUND, ELECTRIC PROPERTY, SEMICONDUCTOR ALLOY, SEMICONDUCTOR MATERIAL, GALLIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0185/70/015/002/0210/0216

PROXY REEL/FRAME--1996/1938

CIRC ACCESSION NO--AP0118900

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118900

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELEC. COND. SIGMA, MOBILITIES MU, CONCN. OF THE MAIN CARRIERS N, AND THE OPTICAL ENERGY GAP (E SUBQ) OF SEMICONDUCTING ALLOYS OF THE (CUINTE SUB2) SUB3(1NEGATIVEX) -(IN SUB2 TE SUB3)SUB2X AND (CUGATE SUB2)SUB3(1NEGATIVEX) -(GA SUB2 TE SUB3) SUB2X SYSTEMS WERE INVESTIGATED. VALUES FOR BAND BAND TRANSISTIONS ENERGY WERE DETD. THE METHOD CONSISTS OF BUILDING THE DIFFERENTIAL CURVES DK-D EPSILON (EPSILON) AND D(1-K)-D EPSILON (EPSILON), WHERE K IS THE ABSORPTION COEFF. AND, EPSILON IS THE PHOTON ENERGY. APPLICATION OF THIS METHOD PERMITS SPLITTING THE VALENCE BAND IN THE ALLOYS WITH THE CHALCOPYRITE LATTICE TO BE FOUND. ALL TRANSITIONS ARE CONSIDERED DIRECT AND ALLOWED. PERCULARITIES IN THE CURVES E SUBO (X) ARE CONNECTED WITH THE CHANGE IN THE CRYSTAL STRUCTURE FROM CHALCOPYRITE TO SPHALERITE. THE DEPENDENCE OF N, SIGMA, E SUBO IN THE ABOVE SYSTEMS SHOWS THEIR DEVIATION FROM THE PSEUDOBINARITY. THIS INCREASES N AND SIGMA IN THE ALLOYS WITH SMALL VALUES OF X COMPARED TO THAT N AND SIGMA IN THE ALLOYS WITH X EQUALS 0. THE RISE OF N CAUSES DEGENERATION OF THE FREE CARRIER GAS AND RESULTS IN THE BURSTAINE EFFECT. FACILITY: VNII MONOKRIST., KHARKOV, USSR.

UNCLASSIFIED

USSR

STASENKOVA, K. P., SKLOVSKAYA, M. L., SERGEEVA, L. G.

"Comparative Evaluation of the Toxicity of Antioxidants for Phenolic Resins"

Sb. "Toksikol. novykh prom. khim. veshchestv" (Toxicology of New Industrial Chemicals--Collection of Works), 1973, vyp. 13, Moscow, "Meditsina," pp 154-157 (from Referativnyy Zhurnal, 30F, Biologicheskaya Khimiya, No 18, 25 September 1973, Abstract No 18F1756)

Translation: A single intraperitoneal administration of 4,4'-dihydroxydiphenyl sulfide (I) and 3,5-di-tertiary-butyl-4-hydroxybenzyl methyl ether (II) to white rats was nontoxic (LD-50 for rats = 7500 and 10,000 mg/kg, respectively). Acute poisoning is characterized by a narcotic action. The cumulative properties are expressed most in the action of I. The coefficient of cumulation, determined by the method of Lim et al., was 1.26 for II. Localized action of I and II on the skin and mucous membranes of the eye was slight. No ability to penetrate into the organism through undamaged skin was found. Repeated (in the course of a month) inhalation of I in a concentration of 0.01 mg/liter and II at 0.02 mg/liter did not cause development of poisoning in the animals. Based on the results of these studies, production and use of I and II in the resin industry should be allowed.

1/1

UDC 543.422.4+541.49+546.831/832

USSR

SERGIYENKO, V. I., DAVIDOVICH, R. L., LEVCHISHINA, T. F., SKLYADNEV, Yu. N. (Chemistry Department, Far Eastern Branch, Siberian Department Acad. Sci. USSR)

"Infrared Absorption Spectra of Zirconium and Hafnium Hexafluorocomplexes"

Moscow, Izvesiya Akademiyi Nauk SSSR, Seriya Khimicheskaya, No 5, May 70, pp 1021-1025

Abstract: In the present work are presented the results of the study on the infrared-spectral absorption of hexafluorozirconates and hexafluorohenafnates of the composition: $M^{I}_2EF_6$ (M^{I} = Li, K, Rb, Cs), $M^{II}EF_6 \cdot 6H_2O$ (M^{II} + Ni, Co, Fe, $MnEF_6 \cdot 5H_2O$ and $CuEF_6 \cdot 4H_2O$ in which M^{I} represent a monovalent - and M^{II} divalent cations and $(EF_6)^{2-}$ represent the octahedral ions in the crystal molecules (E + Zr, Hf). The spectra of all hexafluorocomplexes of zirconium and hafnium with divalent cations showed strong absorption in the regions 400-800, 1600-1700, and 2900-3500 cm^{-1}. In the region 470-495 cm^{-1} there is a strong absorption which agrees with the phase of the monovalent complexes. From the analysis of the infrared spectra it becomes evident that the groups $(ZrF_6)^{2-}$ and $(HfF_6)^{2-}$ are present in all specimens studied.

1/1

UNCLASSIFIED PROCESSING DATE--23JUL70

TITLE--THE REACTION OF C, METHYLHYDROXYLAMINE WITH DNA IN SOLUTION AND INSIDE THE PHAGE PARTICLES -U-

AUTHOR--SKLYARENKO, V.E., KISELEVA, N.P., BUDOVSKIY, E.I., TIKHONENKO, T.I.

COUNTRY OF INFO--USSR

SOURCE--MOLEKULYARNAYA BIOLOGIYA, 1970, VOL 4, NR 1 PP 116-17

DATE PUBLISHED-------70

19 5 24

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HYDROXYLAMINE, DNA, PHAGE, CHEMICAL REACTION MECHANISM, CYTOSINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1978/0566 STEP NO--UR/0463/70/004/001/0116/0117

CIRC ACCESSION NO--APO045590

UNCLASSIFIED

Acc. Nr: AP0045590 Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 1, pp 116-117

THE REACTION OF O-METHYLHYDROXYLAMINE WITH DNA IN SOLUTION AND INSIDE THE PHAGE PARTICLES

Sklyadneva, V. B.; Kiseleva, N. P.; Budovskiy, E. I.; Tikhonenko, T. I.

Institute of Virology, Academy of Medical Sciences, and Institute for Chemistry of Natural Products, Academy of Sciences, USSR, Moscow

It was shown that the cytosine nuclei in native DNA regions practically did not react with O-methylhydroxylamine (MHA). At the same time the cytosine nuclei of denatured DNA regions did react with MHA, the rate of the last reaction being of the same order as that for cytidine. The correlation was shown between the degrees of the DNA denaturation and modification of the cytosine residues. During the reaction of

1/2

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MHA with S_d phage (1 *M* MHA, pH 5.0, 32°, 150 hours) only 16—18 per cent of cytosine residues were modified. The data confirm the hypothesis concerning the specific conformation of a part of the intraphage DNA. It was shown that a complicated dependence existed between the degree of phage DNA modification and the stability of virions. Such dependence is supposed to be due to formation of an intermediate products of cytosine nuclei modification which give covalent cross-linkages between head protein and intraphage DNA.

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